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CANADA'S RESOURCES AND POSSIBILITIES.

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CANADA'S RESOURCES AND POSSIBILITIES.

WITH SPECIAL REFERENCE TO

THE IRON AND ALLIED INDUSTRIES, AND THE INCREASE OF TRADE WITH THE MOTHER COUNTRY.

By J. STEPHEN JEANS,

Secretary of the British Iron Trade Association, Delegate representing the British Iron Trade at the Montreal Congress of 1903, late Secretary to the Iron and Steel Institute, Fellow and Councillor of the Royal Statistical Society, Member of the Royal Institution of Great Britain, Commissioner of the British Iron Trade to Germany and Belgium (1895), and to the United States (1901).

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PREFACE.

In the preparation of this work a three-fold purpose has been kept in view—the first to provide information as to the actual resources of Canada ; the second to enable the reader to understand her commercial conditions, with special reference to her economic system, and the general facts of her trade with the United Kingdom and the United States ; and the third to throw light on the problems connected with the relation of the Dominion to the Fiscal questions that have recently occupied such a large amount of attention throughout the Empire, but probably most of all in Canada—outside of the Motherland.

The opportunities afforded to the writer of learning something as to the resources and economic conditions of the Dominion have been considerable, and in some respects exceptional. He had joint charge, with the late Dr. Selwyn—director of the Canadian Geological Survey—of a large party of members of the Iron and Steel Institute which made a tour through Ontario and some parts of Quebec in 1890, when many places of interest were visited, including the then newly-developed nickel mines of Sudbury. He had then the privilege of an interview with the late Sir John Macdonald, perhaps the greatest of Canadian Premiers. He has since had other opportunities of seeing something of the Dominion, and as a delegate representing the British Iron Trade at the Congress of Chambers of Commerce of the Empire at Montreal in August, 1903, he not only enjoyed the privilege of meeting many of the leading commercial men of the country, but was also introduced to, and had interviews with, a number of the most prominent men in political and legislative circles. The opportunities thus presented of learning something of Canadian ideas, hopes, aspirations, and conditions were accentuated and complemented by the concurrent opportunity afforded by our Canadian hosts of travelling *de luxe* through nearly eleven thousand miles of Canadian territory, and of visiting the great majority of the principal centres of population between the two oceans.

No adequate idea of the industrial conditions of a country can well be presented which does not consider at least the essential elements of national resources, capital, transportation, the earnings, the character,

and the efficiency of labour, the organisation of industry, the extent and character of the competition presented in leading industrial operations, and the conditions of foreign trade as affecting both exports and imports. In the special case of Canada, it has been necessary to consider the kindred questions of general and preferential tariffs, reciprocity arrangements, bounties, the growth of population, and kindred questions. This is a considerable programme, but had the present work embraced less it would have failed more or less seriously to do justice to the subject. As it is, the writer feels that he has come far short of giving due recognition to many conditions and influences which are of more or less fundamental importance. He can only hope that he has presented sufficient data to furnish at least a ground-work for further enquiries on the part of those concerned.

It has, perhaps inevitably, been found difficult to assign definite limits to the present work. Primarily intended for the information and guidance of business men, it can neither inform nor guide them without going into many details that may hardly be deemed pertinent as applied to individual industries. The business man requires to know the conditions of agriculture, fisheries, finance, education, climate, and a hundred and one other things besides the special details of his own business. He wants to know the cost of living, the proceedings and influence of trade unions, the price to be paid for labour, the extent to which efficient labour is available, and many matters of kindred concern.

The Duke of Argyll, when Governor-General of Canada, spoke thus, in pleading for fuller compliance with Colonial ideals and aspirations :—

"The area of Canada and of the Australasian States is so vast, the fertility of the soil is so remarkable, the healthfulness of their climate is so well proved, and the rapid increase of their white population is so certain, that within the lifetime of men here present their numbers may equal our own. . . . They have a filial affection for their Fatherland. They will retain a brother's feeling for us if we are friendly to them in the critical time of their coming manhood. Days may arrive when we may implore their assistance, and when the alliance of those powers, grown into maturity and strength, and under very possible circumstances the strong arbiters of our own destinies, shall be ours through the wisdom we may show to-day."

The words thus spoken by the Marquis of Lorne in 1878 are as true and as applicable to the conditions of to-day—if anything even more so—as to the time at which he spoke.

Lord Dufferin, at a somewhat earlier date, spoke on the same subject as follows :—

"There is not a man in England who does not understand, and to whose imagination it has not been forcibly brought home, that

beyond the circuit of the narrow seas which confine this island are vast territories, inhabited by powerful communities, who are actuated by ideas similar to our own, who are proud to own allegiance to the British Crown, whose material resources are greater than those possessed by his own country, and whose ultimate power may perhaps exceed the power of Great Britain."

In order to appreciate the full force and significance of these remarks, one has to traverse Canada, as I have recently done, from one extremity to the other. Then, and then only, will it be possible to understand the possibilities of the country, both as a great manufacturing nation and as a powerful political unit.

The Dominion has a special interest for the iron trade of the Mother Country for the following obvious and paramount reasons :—

1. Because it is already the greatest market among the possessions of the British Crown, after the Mother Country herself.
2. Because it has offered to the Mother Country greater facilities and consideration than have been offered by any other colony or British possession.
3. Because the future increase of population, and consequently of iron and steel consumption, in the Dominion is likely to greatly exceed that of any other British possession.
4. Because Canada has herself enormous resources in the raw materials of the iron industry, and is likely in the near future to enter on a large scale into the competition of iron-making countries for the supply of the world's markets.
5. Because it is the attitude and the conditions of the Dominion that have primarily raised the pending controversy as to the Fiscal Policy of Great Britain in relation to her Colonies.

Any one of these reasons would be adequate to justify the utmost attention being bestowed on the future of Canada in relation to the British iron and steel industry. There is another, however, that is hardly of subordinate importance. I refer to the fact that in no other market has the British manufacturer been so seriously displaced by his rivals as in that of Canada. Within the last twenty years, the proportion of the total iron and steel imports of Canada contributed by the Mother Country has fallen from more than 70 per cent. to less than 25 per cent. If Great Britain were to-day supplying Canada with as large a share of her total demands as she was twenty years ago, the tonnage annually furnished by the Mother Country would probably be nearly 600,000 tons, which is equal to about 17 per cent. of our tota annual iron and steel exports. Instead of that, we supplied Canada in 1902 with less than 200,000 tons.

So far as the demand for iron and steel is concerned, it is a notice-

able fact that in the United States the greatest increase of population and of wealth has coincided with the greatest increase of the consumption of those metals. The most progressive period was that of the decade 1890 to 1900. In that interval the population rose by 11¾ millions, and the national wealth from 65 to 94 billions of dollars, or from 1038.57 dols. to 1235.86 dols. *per capita*. In the previous decade the increase of wealth was from 42 to 65 billions of dollars, or from 850 to 1038 dols. *per capita*. In other words, the *per capita* wealth in the later period was fully 9 dols. per head greater than in the earlier period. In the decade 1870 to 1880, the increase of wealth was only 71 dols. *per capita*. As it has been in the United States, so may it be with Canada.

What is the rate at which Canada is likely, under proper encouragement, to increase her supply of foodstuffs? The area of wheat under cultivation in the United States rather more than doubled in the period 1866-79. But between 1880 and 1897 it did not advance to any material extent—not more than 4 per cent. Other crops made greater progress. The total annual American production of wheat now ranges from 500 to 700 million bushels annually, according to the character of the crop. The Canadian crop is now only about 96 million bushels annually, but increase of population and outside demands may soon raise that figure to one that will even challenge comparison with that of the United States, Manitoba alone having a much greater wheat-growing area than the 46 million acres of the States in 1902.

In all these respects Canada occupies a position that is perhaps more favourable to rapid development than has ever been held by the United States. The virgin lands that were at one time the backbone of the prosperity of her nearest neighbours, if they have not been largely exhausted, are constantly tending to approach to that point. Canada, on the contrary, has still 250 million acres of the finest and richest agricultural land in the world to be taken up. This land is offered to settlers at little more than a fifth part of the cost of wheat-growing lands that are not nearly so fertile in the States. Canada has, as yet, done little more than make a start with her railway system; but, having an area fully equal to that of the States, there is no obvious reason why her railway system should not, in course of time, expand to the same limits of 200,000 miles instead of the 19,000 miles already laid. And, above all, when the States started on the career which has to-day brought about a population of 80 millions, the countries that supplied the bulk of the immigrants through which that population has been secured were far from being so overcrowded as they are at the present time, so that the inducements to immigrants were not by any means so strong, nor were the facilities for emigration so great.

These facts suggest that Canada, being riper for rapid development, and having some greater facilities for such progress than the United States perhaps had at a similar period of their history, may be expected to advance with greater strides than the United States did at the same stage in their industrial history. Such advance is, of course, likely to be all the more notable if Canada is allowed a preference in the greatest outside food-purchasing market of the world.

This work, it need hardly be said, is not written with any partisan purpose, or to advocate any particular policy in relation to matters of pending controversy, but solely with the view of providing information on matters of public interest.

The writer has had to draw that information from many different sources—from newspapers of the day, from official publications, from pamphlets, addresses, speeches, and other available public records, as well as from his own enquiries and observation. These have been so numerous and so essential that it has been found inconvenient, and has not been deemed necessary, to acknowledge the source whence every fact or statement has been drawn. A general acknowledgment is all that is possible. But the writer feels that the valuable aid he has received from Canadian Government officials, both in Canada and in this country, and from Provincial Government officials throughout the Dominion, is entitled to special recognition.

It may be expedient here to call attention to one or two necessary matters of definition. A large number—perhaps the majority—of Canadians prefer to think and speak of themselves as British, belonging, as they do, to the British Empire, while entirely proud of their connection with the Dominion. In this volume, however, the term British is only used to designate those resident in, or directly belonging to, the United Kingdom, as distinguished from Canadian. Another large and influential group of Canadians resent the habit of applying only to the United States the designation American, although in the absence of any equally convenient designation it has been applied throughout this volume to the people and the interests of the United States, the kindred term Canadian being applied to those who belong to the Dominion.

TABLE OF CONTENTS.

Section I.—Economic Conditions.

CHAPTER. PAGE

I.—*General Features and Characteristics of the Dominion* ... 1
II.—*Dimensions and Population* 12
III.—*Tariffs and Tariff Policy* 22
IV.—*The Imperial Congress and Preferential Tariffs* 30
V.—*The Reciprocity Movement* 43
VI.—*Imperial Consolidation* 48
VII.—*The Canadian Bounty System* 52
VIII.—*The Relations of the Dominion and the Republic* 58
IX.—*Canada and the United States—A Parallel and a Contrast* ... 63
X.—*Some Wants of the Dominion* 74

Section II.—Iron-making Resources of the Dominion.

XI.—*Canadian Coalfields and their Development* 81
XII.—*Ascertained Iron Ore Resources* 96
XIII.—*General View of the Canadian Iron Industry* 114
XIV.—*Works and Operations of the Dominion Iron and Steel Company* 123
XV.—*The Canadian "Soo"* 132
XVI.—*Some Pioneering Plants and Programmes* 143

Section III.—Other Notable Canadian Resources.

XVII.—*General Mineral Resources and Industries* 149
XVIII.—*The Nickel Resources and Mines of Ontario* 165
XIX.—*Agricultural Resources and Development* 172
XX.—*The Water-Power Resources of Canada* 183
XXI.—*Forestry and Fisheries* 193
XXII.—*Wealth of the Dominion* 199

Section IV.—The Human Factor.

XXIII.—*Organisation and Administration* 204
XXIV.—*Prominent Labour Conditions* 213
XXV.—*Remuneration and Hours of Labour* 220
XXVI.—*Employers' and Commercial Organisations* 226

Section V.—Distribution and Transport.

CHAPTER. PAGE
XXVII.—*Canadian Railway Transportation Conditions* 232
XXVIII.—*Trans-Continental Railways and Railway Rates* 241
XXIX.—*Canadian Waterways* 249
XXX.—*Shipping and Shipbuilding* 254

Section VI.—External and Internal Commerce of Canada.

PAGE.
XXXI.—*General Commercial Conditions* 260
XXXII.—*Some Industrial Conditions* 265
XXXIII.—*Canadian Commerce with the Mother Country* 273
XXXIV.—*Canadian Commerce with the United States* 279
XXXV.—*The Competition of the Ports for European Trade* 285

LIST OF ILLUSTRATIONS.

FRONTISPIECE.—Map of the Dominion of Canada.

PAGE

Outline Map of the Province of Quebec in Relation to the Whole Dominion and to the British Isles 2
Outline Map of the Province of Ontario 3
Outline Map of New Brunswick 4
Outline Map of Manitoba 5
Outline Map of British Columbia 6
Outline Map of Alberta, Saskatchewan, and Assiniboia ... 7
Outline Map of Territories 8
Outline Map of Yukon Territory 9
Relief Map of the Dominion 10
Diagram Illustrating the Dimensions of Canada as a Whole, in Relation to the Several Provinces and Territories 15
Diagram Showing the Comparative Areas of European Countries 16
Diagram Showing Areas of Asiatic and South American Countries 17
Diagram Illustrating the Comparative Areas of the Principal British Colonies and India 18
Diagram Illustrating the Dimensions of Leading States in the American Union 19
Trying to Make "John Bull" Jealous 45
Diagram Illustrating and Comparing Area and Population 64
Diagram Illustrating Banking Progress 66
Diagram Illustrating Agricultural Resources 68
Diagram Illustrating Railways and Shipping 69
Diagram Illustrating Mineral Resources and Production 70
Diagram Illustrating Imports and Exports 71
Diagram Illustrating Debt, Revenue, and Expenditure ... 72
Looking Down Inclined Railway from Top of Bank Head, Alberta Railway and Coal Company, Lethbridge 82
Shaft No. 1, with Coal Trestle in Distance, from Bank Head, Alberta Railway and Coal Company, Lethbridge 83
Shaft No. 1, Showing Cars being Loaded with Lump, Nut and Slack Coal, Alberta Railway and Coal Company, Lethbridge... 84
Dominion No. 2 Colliery, Glace Bay, Cape Breton (Claimed as the Largest Coal Shaft in the World) 85

PAGE
No. 1 Shaft Esplanade, Nanaimo 87
Map Showing Location of Nanaimo Coal Mines, Vancouver Island 88
Protection Point, Nanaimo, Showing Coal Shipping Wharves 89
Coal-shipping Wharf at Nanaimo, Vancouver Island ... 90
Timbering at Coal Creek Colliery 91
Methods of Working at Coal Creek Colliery... 92
Another View of Working at Coal Creek Colliery 93
Coke Oven Plant at Comox, Vancouver Island 94
Map of Part of B.C., Showing Location of Coalfields ... 95
Sketch Map of Sydney Coalfield 96
Map of North America, Showing the Occurrence of Iron Ores 98
Helen Iron Mine, Ontario.—Dining Hall and Sleeping Camps 99
Partial View of the Helen Mine, Ontario 101
Walbridge Iron Mine (Madoc), Ontario 102
Bristol Iron Mine, Labelle, Quebec 103
Another View of the Bristol Mine 105
Sarita Magnetite Mines, Barkley Sound, B.C. 107
Texada Mine, B.C.—Showing Contact of Magnetite with Lime 109
340 feet Magnetite Deposit, Bugaboo Creek, B.C. 111
Index Map of Iron Ranges of North Ontario 113
Plan of Works of the Canada Iron Furnace Company, Midland, Ontario 116
General View of the Canada Iron Furnace Company's Works 117
Unloading Pier of the Deseronto Blast Furnaces 119
Casting House of Deseronto Blast Furnaces, Canada ... 120
Comparative Mineral Production of Canada 121
Ore Unloading Wharf of the Dominion Iron and Steel Company, Sydney, C.B. 124
Shipping Piers of the Dominion Iron and Steel Company ... 125
General View of Works of Dominion Iron and Steel Company 127
Plan of Open-Hearth Plant, Blowing Mill, Machine Shops, etc. (Dominion Iron and Steel Company) 128
Otto-Hoffman Coke Oven Plant of the Dominion Iron and Steel Company 129
Moore Coke-Quenching Machine at the Works of the Dominion Company 131
Algoma Steel Works, Sault Ste. Marie, Ontario 133
Algoma Iron Works and Sulphite Mill, Sault Ste. Marie 135
Power Canal and Pulp Mill, Sault Ste. Marie 137
Sulphite Mill, Sault Ste. Marie 140
General View of Trail Creek, B.C., Looking West from Mill 149
Copper Cliff Rock House 150
No. 1 Shaft House at Gold Mine in B.C. 151
Braithwaite Gold Dredge, 14 miles up Sask River 152
Dining Camp at Saw Bill Mine 153
Sleeping Camp at Mine in B.C. 154
Laboratory, Saw Bill Gold Mine 155

PAGE

SANDON, B.C., GENERAL VIEW (1896) 155
WEST SIDE, COLUMBIA AVE., ROSSLAND, B.C.... 156
THREE FORKS, B.C., THE LOCATION OF THE GRANBY SMELTER ... 157
NEW DENVER, B.C., FROM THE WEST 157
KASLO, B.C., GENERAL VIEW LOOKING EAST 158
VANCOUVER ISLAND, BRITISH COLUMBIA, SHOWING MINERAL RESOURCES 159
DIAGRAM SHOWING MINERAL PRODUCTION OF B.C.—1858 TO 1902 160
SQUAW HILL PHOSPHATE MINE, LOEVRE RIVER, QUEBEC 161
VAN ANDA SMELTER, B.C. 162
ROAST YARD, SUDBURY MINES 166
ROAST YARD, COPPER CLIFF NICKEL COPPER MINE, SUDBURY, ONTARIO 167
GENERAL VIEW, WORTHINGTON NICKEL COPPER MINE, SUDBURY 168
MATTE YARD AND SMELTER OF THE CANADIAN COPPER COMPANY 169
DOMINION NICKEL COPPER MINE, SUDBURY, GENERAL VIEW ... 170
FLOUR MILLING PLANT, KEEWATIN, ONTARIO 176
CITY HALL, WINNIPEG 181
SHAWINIGAN FALLS, QUEBEC (THE GREATEST RIVAL TO NIAGARA ON THE AMERICAN CONTINENT) 183
LYNX HEAD FALLS, SEINE RIVER 185
POWER-HOUSE AND ALUMINIUM WORKS AT SHAWINIGAN FALLS, QUEBEC 187
HERB LAKE RAPID INTO GRASS RIVER 189
MAP SHOWING LOCATION OF WATER-POWER PLANTS AND DISTRIBUTING STATIONS, MONTREAL 191
COMMON SCHOOL BUILDINGS IN VANCOUVER 217
ELEVATION OF NEW BOARD OF TRADE OFFICES, MONTREAL ... 235
NEW BRIDGE OVER THE FRASER RIVER, NEAR NEW WESTMINSTER, B.C. 237
MAP OF GRAND TRUNK PACIFIC RAILWAY AND OTHER PROJECTED CANADIAN TRANS CONTINENTAL LINES 246
MAP OF EASTERN SECTION OF GRAND TRUNK PACIFIC RAILWAY 247
BRITISH NORTH AMERICA'S SITUATION IN RELATION TO REST OF WORLD 289

CANADA'S RESOURCES AND POSSIBILITIES.

WITH SPECIAL REFERENCE TO

THE IRON AND ALLIED INDUSTRIES, AND INCREASE OF TRADE WITH THE MOTHER COUNTRY.

SECTION I.—ECONOMIC CONDITIONS.

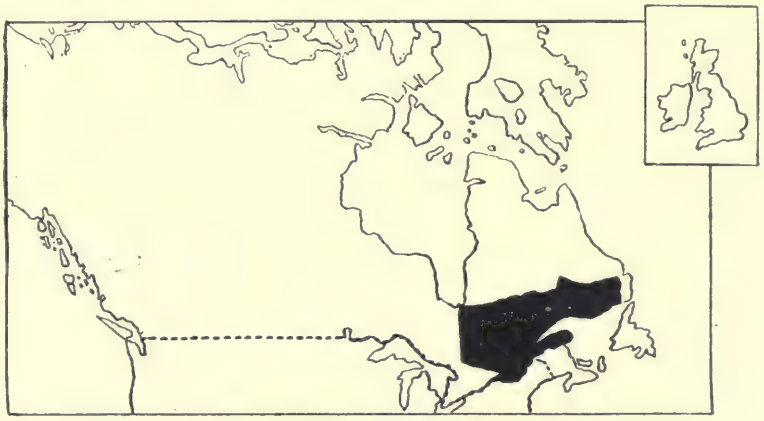
CHAPTER I.

General Features and Characteristics of the Dominion.

For a couple of generations, or more, the people of Canada have been following the even tenour of their way, with but little encouragement, assistance, or show of interest on the part of the Mother Country. For a great part of that period they have not only had to submit to this negative form of affinity, but they have been notified more than once by politicians of high eminence that they were hardly a welcome addition to the British Crown. The terrors that beset the Russian exiled to Siberia are probably not any more keen than the apprehensions that were at one time called up by the idea of emigration to Canada. Distinguished in the Mother Country as "Our Lady of the Snows," the prevailing opinion entertained of this remarkable country until almost our own time has been that it was a bleak, inhospitable, ice bound land, the rigour of whose winters was enough to inspire dread and dislike in the minds of all who were not prepared to grapple with arctic conditions.

That the country should ever have got settled at all under the incubus of such ignorance and indifference as to its true character is a legitimate source of wonder. Nor did it get settled rapidly, nor fail to suffer from the bad repute of which it was unjustly the victim. While the United States were building up a population of 80,000,000, Canada has had much difficulty in assembling 6,000,000. Everything appeared to become benumbed and sterilised on the northern side of the boundary line that divides the two countries. The peopling of the Dominion

had to be largely undertaken on a more or less make-shift system. Street waifs and other constrained elements were deported thither on a considerable scale to provide the population that did not seem disposed to risk Canadian conditions otherwise. All the pictures that were circulated in Great Britain purporting to represent Canadian life showed only the sports and pastimes of a rigorous clime. Very little was ever heard of large fortunes being made. The existence of minerals, excepting in Nova Scotia, and in one or two other localities, was hardly known less than half a century ago. The agricultural resources of the country were just as little recognised, because until the railway gave access to the wheatfields and the orchards, their produce could not be exported. The shipping business was regarded as almost impossible because of the dangers of what Cobbett called "that horrible gulf of the St. Lawrence." Even access from the Great Lakes to the



PROVINCE OF QUEBEC, IN RELATION TO THE WHOLE DOMINION AND TO THE BRITISH ISLES.

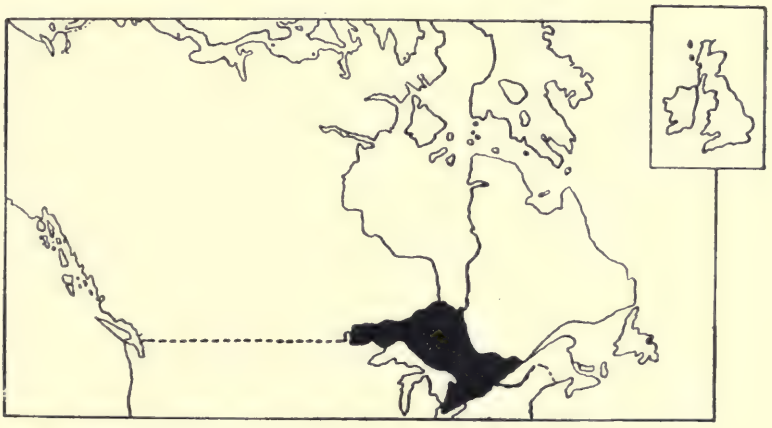
St. Lawrence was blocked by strips of land or other natural barriers which in more recent times have been broken down.

Most of these things now belong to the past. Canada is at last understood and appreciated. Her splendid agricultural resources have become the envy of the world. Her mineral wealth has already been proved to be incalculable, but as nearly one-half of the country has not yet been explored, the future is likely to bring about increase of knowledge that will develop many new surprises. Her scenery is superb. For thousands of miles between the Atlantic and the Pacific it is probably unequalled in variety, beauty, and magnificence on the earth's surface. Her fisheries and her forestry are pursued on an unexampled scale of magnitude. Her recent career has been characterised by bounding prosperity. Her future is assured.

The general features and characteristics thus indicated may be further pursued by a few notes on the several Provinces of the Dominion. These are only intended to convey a superficial idea of the conditions which are more fully dealt with in succeeding chapters.

Nova Scotia.

Nova Scotia is in some respects one of the richest Provinces in the Dominion. It is also one of the smallest, having an area of only 21,428 square miles, or rather over a sixth part of the area of the United Kingdom, and less than a seventeenth part of the area of British Columbia. The total population in 1901 was 459,574, of which only about a sixth part was urban. The principal city is Halifax, with a population in 1901 of 40,832. Nova Scotia is the chief iron-making centre of the Dominion. Its ironworks include those of the Dominion Iron and Steel Company, and of the Nova Scotia Coal and Iron Company on Cape Breton, and the Ferrona and Trenton Works of the last-named Company near Pictou. The Province produces nearly three-fourths of the total output of Canadian coal, the quantity produced in 1903 having been close on 5¼ million tons. It also boasts the greatest iron-making enterprise in the Dominion, and the largest and most productive colliery—that of the Dominion No. 2 mine, at



Ontario compared with British North America and the British Isles.

Cape Breton. The coal area of the Province extends over 1,200 square miles. Its iron ore resources are considerable, and may be traced over a wide range. The other minerals include gold and silver, copper and lead. The Province reserves all its minerals and ores, and leases the land under rent and royalty for revenue purposes. The royalty on coal is 10 cents (5d.) per ton, but this is not paid on workmen's coal, or on coal used in and around the mines. The iron ore royalty is 5 cents (2½d.) per ton.

New Brunswick.

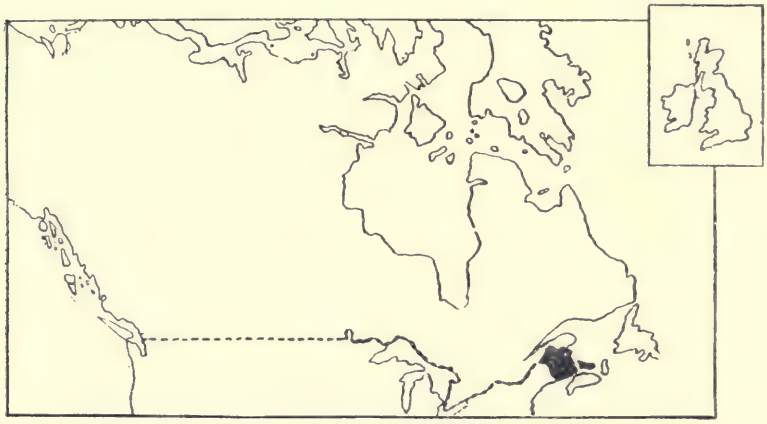
This is one of the smallest, and one of the historically oldest Provinces in Canada. Its area is 27,985 square miles, and its population is about 331,000. Like most of the other Provinces, it has large resources in timber and minerals, fourteen of the former and thirteen of the latter being enumerated. The Province is said to produce every

description of grain and root crop produced in England, as well as some that will not come to maturity in the climate of the latter country. It is stated that a good deal of attention has lately been given to dairying, with the best results. All kinds of garden vegetables, and all the fruits of the temperate zone are grown in abundance in this Province. The industry which employs the largest number of men, and yields the largest returns is, however, the lumber trade; while the fisheries are also of great value, most of the fish caught being identical with the same species in Europe.

QUEBEC.

The Province of Quebec, one of the oldest and most historically interesting in the Dominion, has an area nearly three times that of the United Kingdom, and a population, including the city of Montreal, of about 1,650,000, the density being about five to the square mile.

The resources are more especially large in timber and in minerals. The twenty different descriptions of timber grown in the Province



AREA OF NEW BRUNSWICK IN RELATION TO THE DOMINION AND TO THE UNITED KINGDOM.

include maple, ironwood, oak, cottonwood, butternut, black walnut, giant arbor, pine, spruce, and hemlock. The minerals embrace iron, copper, gold, silver, lead, graphite, chromite, and asbestos. The agricultural resources of the Province are very important, and fruit growing is cultivated on a large scale.

A great deal of attention has of late been given to the northern part of the Province of Quebec, which has a large area of rich and fertile farming land. This region has been given the name of New Quebec. A recent report states that even the chief engineer to the Quebec Government (M. Vallee) was much struck with its resources during a recent trip, and "had no previous conception of its value either to the farmer or to the lumberman."

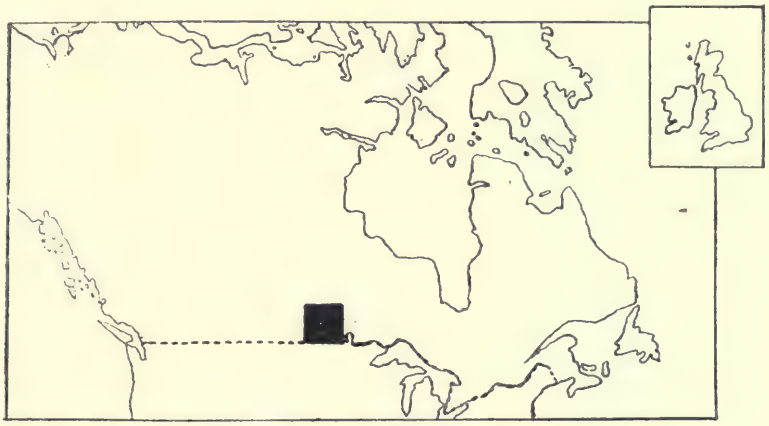
Another report states: "In all this northern section of the Province there is the very finest soil in the Dominion. Though not yet cleared, it is in every way equal to the soil to be found in Manitoba. Water-

power is also to be found here in abundance, and this fact has conspired to stimulate the lumbering trade in that section as largely as has been the case."

ONTARIO.

Ontario, which has an area considerably more than twice that of the United Kingdom, and a population of nearly 2,200,000, has great mineral and timber resources, and a climate which has been pronounced to be "one of the pleasantest and most healthful in the world." The minerals found include gold, silver, lead, nickel, copper, graphite, mica, phosphate, corundum, and petroleum. There are eighteen different descriptions of timber grown over a great part of its area.

As the reader will find later on, the Province of Ontario is exceedingly rich in three directions of paramount importance—agriculture, minerals, and timber. The extent of its mineral resources is not as yet even approximately known, as many parts of its large area have



MANITOBA COMPARED WITH BRITISH NORTH AMERICA AND WITH THE UNITED KINGDOM.

been but little explored. The Province is the most populous in the Dominion, having nearly five times as many inhabitants as Nova Scotia, ten times as many as New Brunswick, nine times as many as Manitoba, twelve times as many as British Columbia. Of its total area of 261,000 square miles, more than 40,000 square miles are water. Its chief city, Toronto, is one of the most important in the Dominion, and possesses a large and varied manufacturing industry.

MANITOBA.

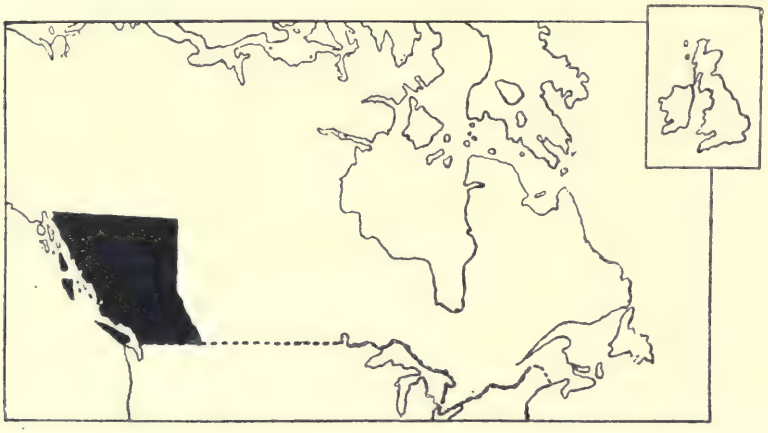
Manitoba comprises within its limits the famed grain-growing valleys of the Assiniboia and Red Rivers. Although called the Prairie Province of Canada, Manitoba has large forests, numerous rivers, and large water areas. The soil is a rich, deep, argillaceous mould, or loam, resting on a deep and very tenacious clay sub-soil. It is specially adapted to wheat growing, giving a bountiful yield of the finest quality, known the world over as Manitoba No. 1 hard wheat. During the past ten

years the growth of wheat and other grains has greatly increased. It is computed that in 1902, 35,000 farmers produced 100,000,000 bushels. Of the 23,000,000 arable acres in Manitoba, about 4,000,000 are under cultivation in all crops.

Alberta and Assiniboia.

This territory is the most westerly of the several divisions of the North-West Territories, having an area of 102,000 square miles. It extends from the western limits of Assiniboia to the eastern limits of British Columbia, within the range of the Rocky Mountains, and is divided into Northern Alberta and Southern Alberta. The Calgary and Edmonton Railway passes through the two divisions from McLeod in the south, where it connects with the Crow's Nest Railroad, running into the Kootenay gold-mining country, to Edmonton in the north, affording markets and shipping facilities at a number of convenient places along the whole distance.

Assiniboia is divided into two great areas—Eastern and Western



Area of British Columbia in relation to the Area of the Dominion and of the United Kingdom.

Assiniboia—each of which has its own peculiar characteristics, the former being essentially a wheat growing and mixed farming country, and the western part being especially adapted for ranching.

Eastern Assiniboia very much resembles the Province of Manitoba. The verdure is most luxuriant, and the ground is exceptionally well adapted for grain growing. Thousands of homesteads and immense tracts of railway lands have been taken up in this part during the year 1903. Good free grant lands are still to be had. The district is gradually becoming one of the greatest wheat producing countries of America.

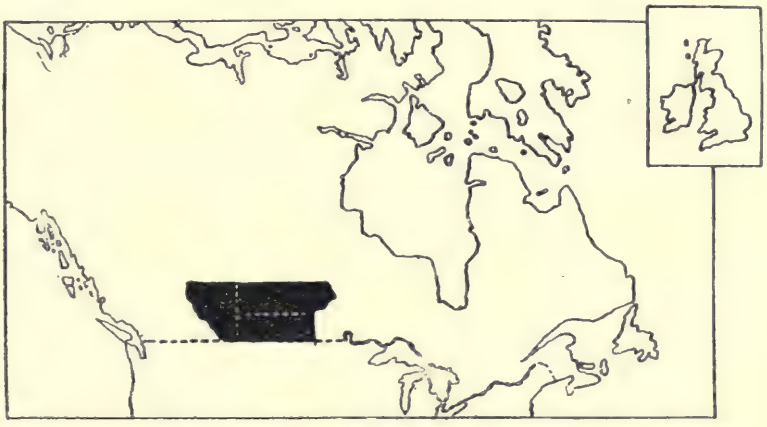
Western Assiniboia is similar in its eastern part to Eastern Assiniboia, and is favourable for mixed farming. The supply of timber on the hills is considerable.

The Territories.

The North-West Territories have, perhaps, the greatest area in relation to their population of any part of the earth's surface. The total area is 2,140,000 miles, and the total population is 25,490, so that the density (?) of population is nearly one to each ten square miles. Needless to say, the country generally is but little known, while the great bulk of it is unexplored. Indeed, three-fifths of its area is covered with spruce forests. It has been ascertained that there are minerals in various districts, including gold, copper, and lead. The development of the mineral wealth of these vast territories must be a question of time only. On the north-west shores of Hudson's Bay, bleak and inhospitable as is the region, coal and iron have been proved, and in the vicinity of the Great Slave Lake copper and lead abounds. The only white population at present is a handful, most of them attached to the trading posts, which, however, are wide apart.

British Columbia.

This is the most westerly Province of the Dominion of Canada, lying immediately to the north of the American States of Washington,



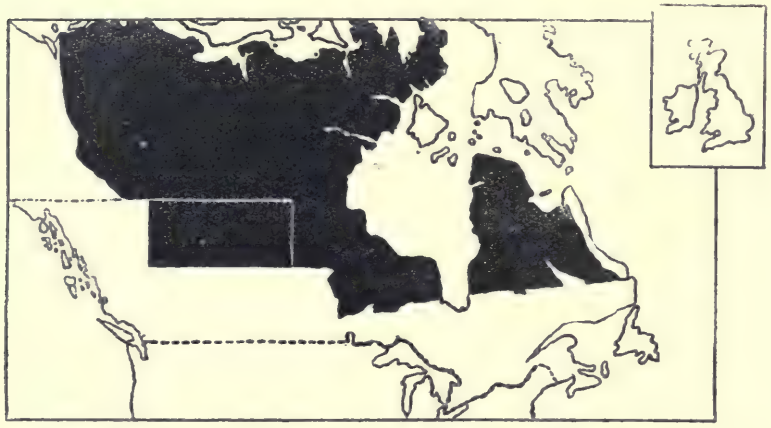
Alberta, Saskatchewan, and Assiniboia compared with British North America and the United Kingdom.

Idaho and Montana. It is at present Canada's only outlet to the Orient, and to the whole of the North Pacific Coast. Few countries have shown as great progress during recent years as British Columbia and it is now offering unsurpassed inducements to the settler in search of a farm, the stock man seeking a ranch, the miner, the lumberman the fisherman, the business man, and the capitalist, whether large or small, who seeks investment. The wooded area of British Columbia covers thousands of square miles, and includes forty kinds of timber. The finest growth is on the coast, on Vancouver Island, and in the Gold and Selkirk ranges. The approximate number of lumber and shingle mills in the Province in 1902 was over 120, whose aggregate output was about 240,000,000 feet of lumber and over 200,000,000 shingles. An acre

of British Columbia forest sometimes yields 500,000 feet of lumber, rendering the deforestation slow. The water-powers and streams suitable for mill sites are numberless.

"The Gateway of the Empire" is the picturesque and appropriate name given to the town of Vancouver—a town that had practically no existence 25 years ago, but has now a population of about 30,000, with some fine streets, many handsome public buildings, churches, schools, hotels, and clubs, and furnished with all the usual municipal accessories of a more ancient and solid community. Food is cheap, but house-rent is dear. There is a tax on incomes and on the capital embarked in business. Of late years there has been an extraordinary increase in the value of land. The principal stores in the town are carried on by the Hudson Bay Company, who own, I was informed, about 150 such establishments throughout the Dominion, and who appear to sell everything, from a needle to an anchor.

Vancouver City has an excellent harbour, situated on the south or



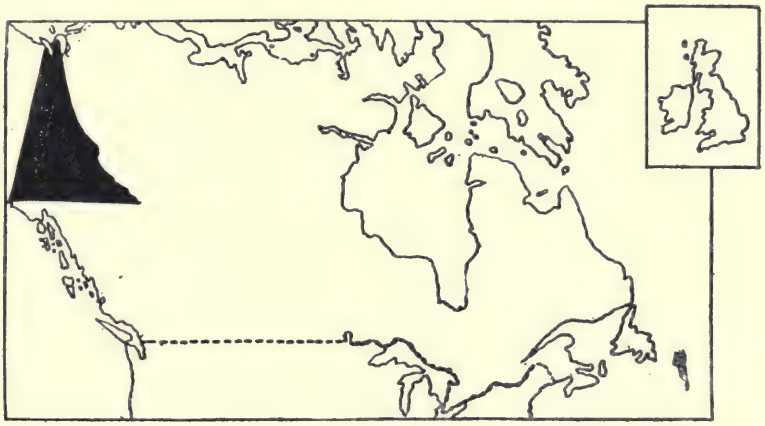
THE TERRITORIES OF THE DOMINION—FRANKLIN, KEEWATIN, MACKENZIE, UNGAVA, AND ATHABASCA—IN RELATION TO THE REST OF CANADA AND TO THE UNITED KINGDOM. (Area, 2,139,524 square miles).

city side of the bay, and extending up to the Canadian Pacific Railway station. The harbour front is already pretty well taken up with wharves, factories, repairing yards, and other business premises. A large part of the harbour is in the occupation of the Canadian Pacific Railway, to whom it belongs, and I was informed that the Company has certain arbitrary powers over the harbour, including the right to prohibit the use of its wharves by ships not approved. There is not much unoccupied space left on the south side of the harbour, so that before long the north side of the bay is likely to be taken up for harbour purposes, which means that the wharves will be further away from what is now the business centre. The harbour has thirty feet depth of water at low tides.

British Columbia has been termed "Britain on the Pacific," and this is the title proudly given to it by its inhabitants. As far back

as 1578 or 1579 Sir Francis Drake reached that part of the Pacific, but he appears not to have noticed Vancouver Island, and stress of weather drove him back to Drake's Bay, near San Francisco. In 1592, however, Juan de Fuca sailed through the Straits for a considerable distance, and judging by his description he appears to have been under the impression that he had discovered the north-west passage from the Pacific to the Atlantic. The Spanish seem to have occupied many portions of this part of the globe. The memory of the Spaniard is perpetuated on the coast by the names of the various islands, such as San Juan, Fidalgo, Gonzalo, Rosario, and others.

The principal business done on the coast in the earliest times was the bartering for furs with the Indians, till the Hudson Bay Company in 1848 established a trading port at Camosun, now Victoria. Gold was discovered in the same year, and there was a large influx of miners and traders. At this time the modern history of the Province commenced as a Crown Colony. In 1871 con-



YUKON TERRITORY IN RELATION TO THE DOMINION AND TO THE UNITED KINGDOM.

federation took place. In 1880 the Canadian Pacific Railway was commenced, and was completed in 1885.

THE "SEA OF MOUNTAINS."

If I were writing an ordinary guide book, I should have much to say of the scenery of Canada, and especially of that wonderful country lying between Calgary and Vancouver, which has been picturesquely described as a "sea of mountains," extending over a total distance of about a thousand miles. But as it is, I can only stop to say that this "sea," with all its wealth of magnificent scenery, has something much more utilitarian to boast of, in mining resources that embrace coal, iron, copper, lead, silver, and gold among minerals already proved and worked, and other minerals that remain to be developed.

The wealth of timber in this region is extraordinary. Forests abound everywhere, and almost everywhere are also to be seen the evidences of vast forest fires, which have in previous years devastated many thousands of acres.

Canada's Unexplored Tracts.

The director of the geological survey of Canada, in one of his last reports, makes the statement that practically nothing is known of one-third of the Dominion. He says there are more than 1,250,000 square miles of unexplored lands in Canada. Exclusive of the nhospitable detached arctic portions, 954,000 square miles is, for all

Relief Map of the Dominion.

practical purposes, entirely unkown. The unexplored regions include, at the extreme north-west of the Dominion, the areas between the eastern boundary of Alaska, the Porcupine River, and the arctic coast, about 9,500 square miles in extent, or somewhat smaller than Belgium, and lying entirely within the arctic circle. The next is west of the Lewes and Yukon Rivers, and extends to the boundary of Alaska. Until within the last two years 32,000 square miles in this area was unexplored, but a part has since been travelled. A third area of 27,000 square miles—nearly twice as large as Scotland—lies between the Lewes, Pelly, and Stikine Rivers. Between the Pelly and Mackenzie Rivers is another large tract of 100,000 square miles, or nearly double the size of England. It includes about 600 miles of

the main Rocky Mountain range. An unexplored area of 50,000 square miles is found between Great Bear Lake and the arctic coast, being nearly all to the north of the arctic circle. Nearly as large as Portugal is another tract between Great Bear Lake, the Mackenzie River, and the western part of Great Slave Lake, in all 35,000 square miles. Lying between the Stikine and Laird Rivers to the north, and the Skeena and Peace Rivers to the south, is an area of 81,000 square miles, which, except for a recent visit by a field party, is quite unexplored.

The figures which have just been presented make it clear that no one is in a position to say what Canadian resources may be over a large part of the Dominion, and that, therefore, we may be prepared for many discoveries, and perhaps surprises, in the future. If it be the fact that there are some 1,250,000 square miles of area still unexplored, it is only necessary to indicate that this is more than ten times the area of the United Kingdom, in order to impress the reader with a sense of the magnitude of the work which remains for the future in the disclosure and utilisation of Canadian capacities.

CHAPTER II.

The Dimensions and Population of Canada.

Absolute and Relative Dimensions.

The only two countries in the whole world that equal the Dominion in area are the Chinese Empire and the Russian Empire, including Siberia. The Chinese Empire is only about 4 per cent. larger, but the Russian Empire, with its vast territories in Siberia and Central Asia, is about 70 per cent. larger, and has, of course, by far the greatest territory of any nation in the world. The only other countries that come near to the Dominion in extent of area are the United States, which, including Alaska, is less by 123,000 square miles, or rather more than the total area of the United Kingdom; and Brazil, which, with an area of 3,218,166 square miles, is 527,408 miles less, or, in other words, is smaller by an extent of territory which equals the united areas of France, Germany, Holland, and Belgium. Canada is larger by 773,000 square miles than Australia, and exceeds by 643,000 square miles the area of the whole Australasian Continent, including Tasmania and New Zealand. Put in another way, the greater area of the Dominion is exactly equal to the combined areas of Germany, France, Italy, and the United Kingdom. If we take our Indian Empire as a standard, it appears that the area of the Dominion is equal to four times that of British India, and nearly three times that of the whole Indian Empire.

The most familiar standard of area to British readers is that furnished by European countries. Applying that standard, then, it appears that the size of the Dominion equals thirty-one times that of the United Kingdom, eighteen times that of France or Germany, thirty-two times that of Austria, thirty-three times that of Italy, three hundred and twelve times that of Holland, three hundred and forty times that of Belgium, and twice that of Russia in Europe.

The Alaskan possessions of the United States are of somewhat greater area than the Mackenzie territory in the Dominion, but only by about 5 per cent. The next greatest area belonging to the United States is Texas, but the Dominion has five much greater areas than Texas in the Franklin, the Keewatin, British Columbia, Ungava, and Quebec. All of these, as well as Ontario, Athabasca, and the Yukon, are much larger than any other single state or territory on the other side of the line. When we come to compare Canada with the best known and most important states—otherwise than geographically—we find that the Dominion is seventy-five times the size of New York State, eighty-three times that of Pennsylvania, and ninety-one times that of Ohio.

Canada is geographically divided into sixteen territories and provinces, the largest of which is the Mackenzie territory, with an area of 562,182 square miles, or more than eleven times the size of New York State, and not far from five times the size of the United Kingdom. This vast territory is as yet but little known. The same remark applies to the next largest territory—that of Franklin—with a computed area only 62,182 miles less than that of Mackenzie, and to Keewatin, which is a territory 70,416 miles less than that of Franklin. Compared with the dimensions of the best known European countries, these territories are almost appallingly vast. The Mackenzie alone is nearly three times the size of France or Germany, fifty-one times the size of Belgium, about fifty times the size of Holland, and more than five times the size of Italy.

Some years ago the statement was made that Canada embraced 45 per cent. of the entire area of the British Empire. At that time the area of the Empire was computed at about eight million square miles. It is now, by the conquests in South Africa, increased to more than nine million square miles, but the proportionate representation of the Dominion is still 40 per cent. of the whole.

The basin of the Hudson's Bay alone has been computed to include nearly two million square miles. In this region are the fertile plains of the Saskatchewan Valley, which, according to Lord Selkirk, are alone capable of supporting thirty millions of people. This is likely to be somewhat overstated, although it is interesting to note that a European area, similarly situated east of the tenth degree of longitude, comprehends very nearly the whole of England and Ireland, the north-east corner of France, the whole of Belgium and Holland, and the greater part of the valley of the Rhine.

We often hear of the content with which the average citizen of the United States contemplates the fact that, as between the Atlantic and Pacific, there are no stretches of territory that do not contribute to his greatness. This claim can equally be shared by Canada. But the American has limitations on the north by a line drawn at the St. Lawrence and the Lakes, and along the forty-ninth parallel, against which his commerce beats as against an impenetrable wall, and like a wave rolls back upon itself. A night's journey from Boston or New York, and the limit of his boasted areas towards the north are reached; two nights and a day, even from Chicago, in the centre of his territory, and the ground to the north covered by the trade of that great city is exhausted. Not so with the Canadian. Not only does his territory stretch two hundred miles further out into the Atlantic, on the Nova Scotia coast, than the average of the United States—not only does it then stretch across a vast continent of untold wealth to the Pacific, on the coast of British Columbia, but it extends as far north as the Arctic Ocean. Let us follow the figures included in these measurements. Adopting the eighty-fifth degree of longitude as a centre, Canada stretches west to the one hundred and thirtieth degree, and east to the forty-second degree—forty-five degrees on one side and forty-three degrees on the other. North and south the Dominion stretches from the fifty-first degree of latitude, south to the forty-second degree, and north to the frozen sea.

The absolute and relative size of the Dominion is so dominating a factor in every aspect and phase of its character and progress that I have had taken out a series of original diagrams, in order to convey clearer impressions of the subject. These diagrams show how Canada compares with both the largest and the smallest countries in the world, including those which, like itself, form parts of the British Empire. No similar series, so far as I am aware, has hitherto been prepared, but the matter is one of sufficient importance to justify the labour and the space involved.

These diagrams, exhibiting the comparative dimensions of Canada, and conveying impressions that would be impossible by the aid of figures alone, have all been drawn to exactly the same scale, showing at a glance how Canada stands in respect of area. They are as follows :—

1. A diagram illustrating the dimensions of Canada as a whole in relation to her several provinces and territories.
2. A diagram showing the comparative areas of the leading countries of Europe.
3. A diagram representing the comparative areas of the principa countries in Asia and in South America.
4. A diagram which compares Canada with other possessions of the British Crown.
5. A diagram representing the comparative dimensions of the leading States in the American Union.

These diagrams, which are probably deserving of careful consideration, present some striking contrasts. The most notable in respect of Canada herself is that of Prince Edward Island in relation to the whole Dominion. Not less striking is the relation of Belgium to the Russian Empire among European countries, and of Japan in relation to the Colossus of the North, the latter being forty-three times greater. The diagrams may be of interest apart from their main purpose of illustrating the absolute and relative size of the Dominion.

Growth and Character of Population.

One of the most remarkable features of the recent economic history of the Dominion is the increase in the number of "homesteaders"—persons who have taken up wheat or ranching lands for settlement. In 1891, 2,548 entries of this description were made by Americans, out of a total of 9,108, and in 1902 the corresponding number was 8,061, out of a total of 22,215. In the interval the total had increased by 144 per cent., but the number of American entries had increased by 216 per cent. To these figures, however, should be added the entries of Canadians who had returned from the United States to re-settle in their own country, numbering 205 in 1901, and 737 in 1902. The migration of British agriculturists, although not nearly on so large a scale as that of Americans, had still in this period shown a great increase, numbering as it did 945 in 1901, and 2,395 in 1902. The total number of entries originating from Dakota in 1902 was 3,197; from Minnesota, 2,718 ; from Nebraska, 463 ; from Iowa, 554 ; and from

Montana, 173. The 22,215 homestead entries in 1902 represent an increase of 64,968 souls.

While the bulk of the new settlers going into agricultural pursuits in the Provinces of Manitoba and the North-West Territories is American, the composition of the new settlers otherwise is sufficiently varied, and includes natives of most of the leading countries of Europe. The preponderating European element is English, Scotch, and Irish; there is also a large and increasing migration from Austria-Hungary,

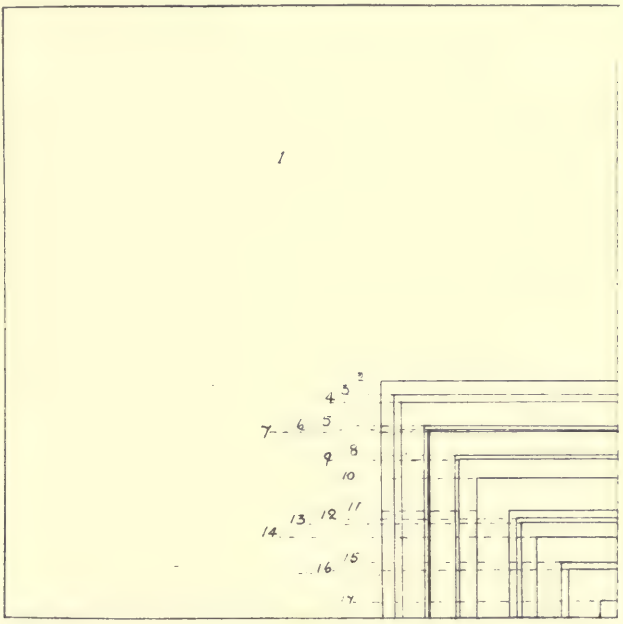


FIG. 1.—DIAGRAM ILLUSTRATING THE DIMENSIONS OF CANADA AS A WHOLE IN RELATION TO ITS SEVERAL PROVINCES.

	Sq. miles		Sq. miles.
1. Canada	3,745,574	9. Athabasca	251,965
		10. Yukon	196,976
2. Mackenzie	562,182	11. Saskatchewan	107,618
3. Franklin	500,000	12. Alberta	101,883
4. Keewatin	470,416	13. Assiniboia	88,879
5. British Columbia	372,630	14. Manitoba	73,732
6. Ungava	354,961	15. New Brunswick	27,985
7. Quebec	351,873	16. Nova Scotia	21,428
8. Ontario	260,862	17. Prince Edward Island ...	2,184

Germany, Sweden and Norway, Russia, France, and Roumania, and the list for 1902 includes 183 Icelanders and 207 Doukhobors.

The increase of farming population represented by the settlements of 1902 is not less than 65,000 souls. At the same rate of increase, maintained over the next ten years, the increase of farming population during that period—including natural increase—may be taken as well over a million. This increase would, of course, proceed *pari passu* with an increase of the population in all urban centres and

in other industries, which it is not at all unreasonable to place at an even higher figure. Indeed, everything points to a probable accession of three or four millions to the population of the Dominion within the next ten years.

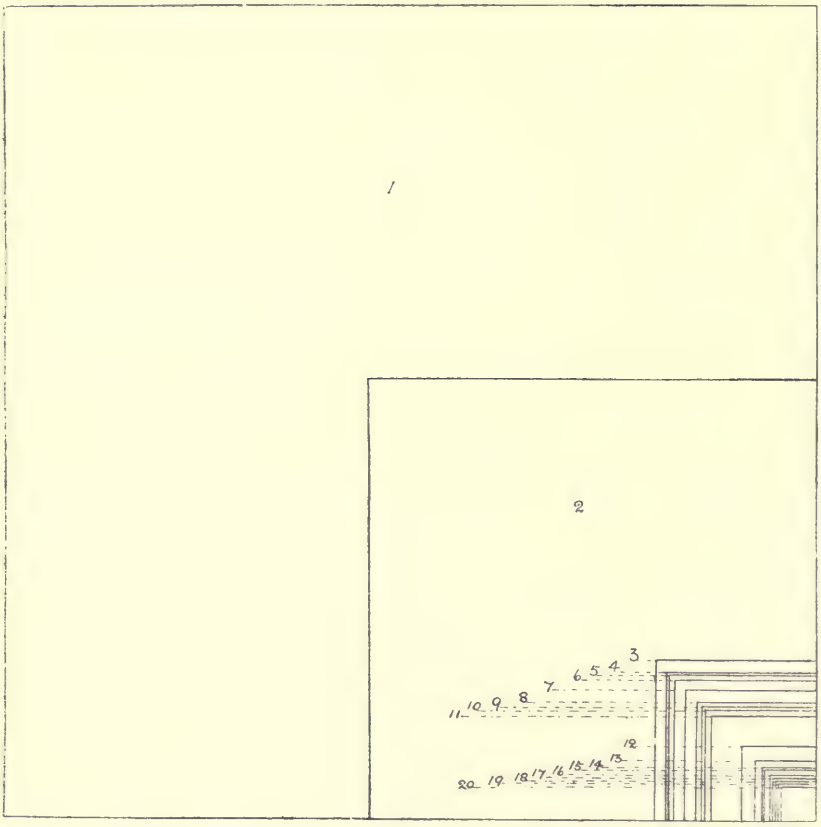


FIG. 2.—DIAGRAM SHOWING THE COMPARATIVE AREAS OF EUROPEAN COUNTRIES EXCEPT THE RUSSIAN EMPIRE, WHICH INCLUDES RUSSIA IN ASIA.

	Sq. miles.		Sq. miles.
1. Russian Empire	6,369,685	11. Italy	110,623
2. Russia in Europe	1,887,043	12. Roumania	50,160
3. Austria-Hungary	240,218	13. Portugal	34,499
4. German Empire	208,670	14. Greece	24,970
5. France	204,031	15. Bulgaria	24,693
6. Spain	195,716	16. Servia	18,704
7. Sweden	170,661	17. Switzerland	15,442
8. Prussia	134,462	18. Denmark	14,751
9. Norway	124,666	19. Holland	12,515
10. United Kingdom	121,305	20. Belgium	11,370

The total emigration to Canada in the year 1903 is nearly double what it was in the year previous—reaching a total of 125,658, and this figure will be largely increased during the year 1904. During the ten years preceding 1901, 60 per cent. of the British emigration settled

in the United States, and only 10 per cent. in Canada. To-day not only is a large proportion of the British exodus finding its way to Canada, but within the first seven months of 1903 nearly 30,000 citizens of the United States crossed the border to settle in Canadian homes.

The changes in the character and the numbers of the population that have happened in the last half century have been remarkable. This may be illustrated by some figures relating to the North-West.

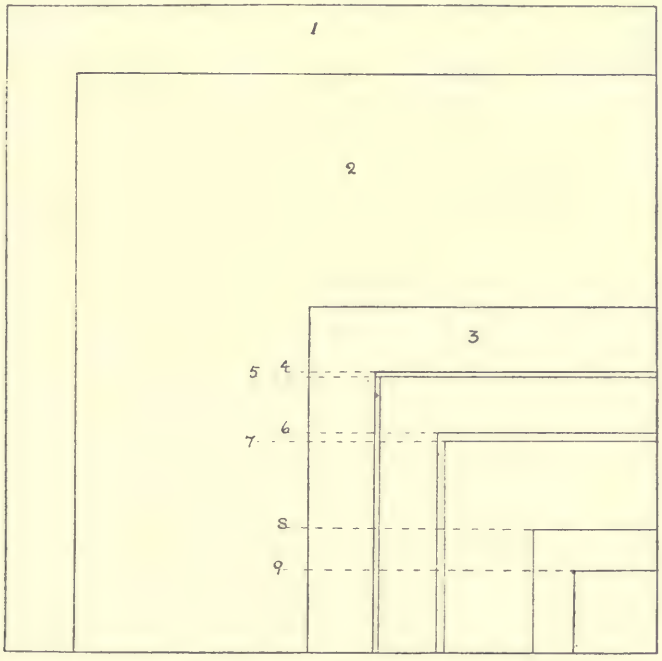


FIG. 3.—DIAGRAM REPRESENTING COMPARATIVE AREAS OF ASIATIC AND SOUTH AMERICAN COUNTRIES.

	Sq. miles.		Sq. miles.
1. China	3,924,837	6. Peru	454,708
2. Brazil	3,218,166	7. Venezuela	439,119
3. Argentine	1,158,000	8. Japan	147,655
4. Chili	753,216	9. Uruguay...	72,151
5. Mexico	741,791		

In 1844 Assiniboia had a population of 3,391; in 1856, of 6,961. Manitoba's population in 1870 (exclusive of Indians) was 12,229. In 1861 Vancouver Island had a population of 3,024, of whom 2,350 belonged to the town of Victoria or its vicinity. In 1870 British Columbia had a white population of 10,588; in 1874 the population was estimated to be 15,000, thus distributed: Whites, 11,500; Chinese, 3,000; blacks, 300; Kanakas (Hawaiians), 200. The figures above given enable us, however, to estimate the population of all the provinces and territories in 1851, Indians included, as something less than 2,500,000.

Future Population.

Mr. Drummond, the President of the Canadian Manufacturers' Association, in his recent inaugural address to that body (September, 1903), stated that in fifteen years Canada was likely to have a population of 20 millions, and within fifty years, the population of the Dominion might possibly be as great as that of the Mother Country. He proceeded to add:—"We have the United States, our friends to

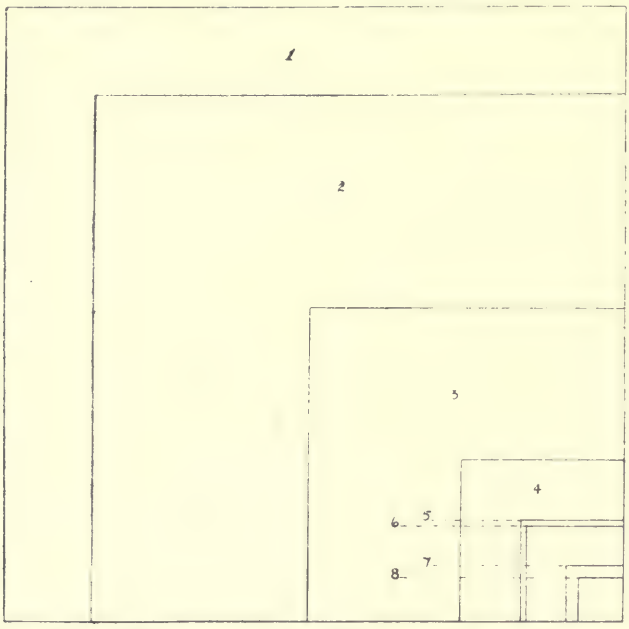


Fig. 4.—Diagram Showing the Area of Principal British Colonies and India.

	Sq. miles.		Sq. miles.
1. Canada	3,745,574	5. New Zealand	104,471
2. Australia	2,972,573	6. British New Guinea	90,540
3. British India	964,993	7. Natal	29,200
4. Cape Colony	277,151	8. Ceylon	25,365

the south—rivals commercially, friends always, I hope—we have them to the south, wide-awake to the fact that with the tide of emigration which has set in Canadawards will come the development, the growth in wealth and in population within the next few years that will rival at least in large measure the growth in the United States during the last forty years, and a development that has been the wonder of the civilised world."

At what rate is the population of Canada likely to advance in the future? Opinions naturally differ on this point. At the meeting in Toronto last September of the Canadian Manufacturers' Association, Mr. Brassey, M.P., asked Mr. Ross, the Premier of Ontario, "What would have been the population of Canada to-day if such a policy as that of preference on foodstuffs had been instituted twenty years ago?"

Mr. Ross replied, "Twenty millions." Mr. Brassey responded, "I believe you say what is true," and he added, "Is not the growth of Canada likely to be infinitely more rapid in the next twenty years if this policy is carried through than if the present fiscal policy in the Old Country is retained?"

Mr. Jas. J. Hill, the President of the Great Northern Railway, has expressed the opinion that within the next fifty years Canada will have a population of fifty millions; and although this may be regarded as an exaggerated, or, at any rate, highly optimistic view, it will be remembered that Mr. Hill has a very thorough knowledge of the country and of its outlook.

Comparison with United States.

A short comparison with the conditions of the United States may here be instructive.

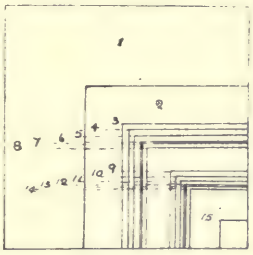


Fig. 5.—Diagram Representing the Comparative Dimensions of the Leading States in the American Union.

	Sq. miles.		Sq. miles.
1. Alaska	590,844	9. Illinois	56,650
2. Texas	265,780	10. New York	49,170
3. California	158,360	11. Pennsylvania	45,215
4. Montana	146,080	12. Ohio	41,060
5. New Mexico	122,580	13. Kentucky	40,400
6. Arizona	113,020	14. Indiana...	36,350
7. Nevada...	110,700	15. New Jersey	7,815
8. Colorado	102,925		

The population of the United States in the first fifty years of its national history was not recruited to as large an extent by immigration as is generally supposed. In 1820 the number was 8,385; in 1830, 23,322; in 1840, 84,066. With 1850 the stream had become much more considerable, but by 1860 it had again fallen to less than one-half the numbers of 1850, and 1870 saw those numbers increased by about 77,000. The maximum annual immigration was between 450,000 and 500,000, the year 1900 having witnessed the arrival on American shores of over 448,000, despite the greater strictness exercised in looking into the conditions and characters of the new arrivals.

Canada has hitherto been entirely unable to show anything like these later figures for the United States. For the five years ended 1902, the average annual immigration into the Dominion has been about 40,000. Perhaps the most notable feature in this movement of population has been the relatively great numbers that have migrated from the United States. The official returns show that while, over

these five years, England and Wales contributed an average of 8,800, and Scotland an average of 1,200 immigrants annually, the number furnished by the United States was 14,400 annually. Next to the American and the English, the nation that furnished the largest number of immigrants has been Galicia, with 5,400 annually. The German element is relatively unimportant, but during the last three years there has been a considerable immigration of Russians and Fins.

For the year 1903 (to June 30th) the immigration into Canada very largely exceeded that of any previous year. Of the total of 125,658, 45,980 were from the United States, 41,787 from the British Isles, and 37,891 from the European Continent.

In the case of the United States, it is computed that from first to last something like 25,000,000 immigrants have established homes in the American Republic. It is officially estimated that the present foreign born population of that country exceeds 10,000,000, and that more than 26,000,000, or nearly one-third of the whole population, are of foreign parentage.

No official record of arrivals was kept prior to 1820. During that year immigrants numbered 8,385. The total population at that time was 9,658,453, a little less than the present population of New England and New York State. The immigration of the fiscal year 1902 was 857,046. Assuming the present population to be 80,000,000, it appears that whereas the total population is about 8·3 times greater than it was eighty years ago, the number of immigrants is multiplied by 100 when 1820 is compared with 1903. Whereas the arrivals in 1820 were as 1 to 1,155 of resident population, in 1903 they are as 1 to 93. It is estimated that of the 20,000,000 emigrants who have left Europe during the last thirty years about two-thirds have come to the United States.

In earlier years the greater part of the immigrants to the United States came from England, Ireland, Germany, and from Norway and Sweden. These people, by reason of racial correspondence, were assimilated, politically and socially, with little or no difficulty. The exceptional immigration which began about the year 1880 coincided with the real beginning of that vast expansion of the economic interests of the United States, which has marked the last quarter of a century. The Western plains were then available as fields of corn and wheat. Thousands of miles of railway were being constructed, and vast industrial enterprises were being established all over the land. Some 6,000,000 immigrants entered the country between 1880 and 1890, who not only derived the benefit of this increase of national wealth, but also did much to make that increase possible.

A recent writer has pointed out that the industrial expansion of the United States is still going on, but its pace is less rapid than it has been, and opportunities for settlement and for employment as well are less abundant than they were even ten years ago. The natural increase of an enormous population furnishes a fairly efficient supply of both settlers and labourers.

It has been pointed out by a recent writer that a great change has taken place in the class and character of the immigrants to the

United States. In the decade of 1881-1890 the arrivals from England, Ireland, Scotland, Germany, Norway and Sweden—the Celts and the Saxons—numbered 3,484,171 ; and the arrivals from France, Italy, Russia, and Austria-Hungary—the Slavs and the Latins—numbered only 976,580. This gave a marked preponderance to the first of these groups. In the decade of 1891-1900 the same groups showed 1,615,718 of the Celts and the Saxons, and 1,877,587 of the Slavs and the Latins, thus giving a small majority of the latter. During the fiscal year ended June 30th, 1903, England, Ireland, Germany, Norway and Sweden contributed only 172,094 of their people, while Italy, Russia, and Austria-Hungary sent 572,726.

It may be added that no other country in the world, in proportion to the population, has shown such great increases in its trade and commerce during the past five years as Canada, the figures for both exports and imports having nearly doubled during that time. Last year the total trade of Canada amounted to 467,000,000 dollars, an increase over the previous year of more than 43,000,000 dollars. The bank deposits of Canadian people showed a total last year of 460,000,000 dollars, and the foreign trade more than 79 dollars *per capita*, which is the fourth largest in the world, being exceeded only by Great Britain, Belgium, and Cape Colony.

The Canadian French.

Canada has its cross to bear like other nations—like the United States with some of its population, the United Kingdom with the disaffected Irish, the Austro-Hungarian Empire with the Slavs, and the Germans with the Socialists. The Canadian French are a law-abiding people, and there is no reason to doubt that they are fairly loyal. But they are not enterprising ; they are satisfied to lead an unambitious, unprogressive life ; they are more or less penurious in their habits and parochial in their ideas and aims, and they require a good deal of managing. I was informed in Montreal (which is in the Province of Quebec, and therefore subject to the control of the Legislature there), that there was a constant liability to friction and to trouble in that city —the commercial capital of the country—because the French element controlled the Legislature, which, in turn, controlled the public business of the Province, Montreal, of course, included ; that it was most difficult to secure approval for public improvements or Legislative Acts that did not accord with French ideas and interests, and that much money had to be expended in promoting and fostering necessary legislation which should not, and would not, be necessary if the French element was more liberal, far-seeing, and progressive in its characteristics. In other Provinces this influence is hardly felt, the French being in a minority. I am bound to add that the French Canadians with whom I have myself come into contact are courteous, genial, and friendly, although expressing no enthusiasm on behalf of the Imperial idea or affection for the flag. On the whole, whatever their feelings may be, the French Canadians are a legacy to the future that is much more likely to be serviceable than part of the population on the other side of the line, but one cannot avoid the feeling that a different race would have better helped the onward march of the Dominion.

CHAPTER III.

The Tariff and the Tariff Policy of the Dominion.

The Canadian tariff has for a considerable time past been a matter of anxious debate, not in Canada only, but in the United States and in the Mother Country as well. There is no need to enter upon a long discussion of the policy of which that tariff is the outcome. The people of Canada, like those of most other civilised countries, are more or less divided upon the merits of protection. The agricultural community, as a rule, favour a low tariff. The manufacturing community urge a high tariff. Both speak and think as their interests dictate. There is, however, a great middle strata which appears to be undecided as to the tariff policy best suited to the needs and interests of the country, and who, probably, if asked to vote on the problem, would desire to avoid both the Scylla of ultra freedom of trade and the Charybdis of hide-bound protection.

From the point of view of the Mother Country two things are declared to be desirable, but they are so diametrically opposite in character that they cannot by any possibility be reconciled. The one thing is a low scale of duties, ostensibly designed to enable the Mother Country to secure a *quid pro quo* for the preference which it is hoped she may concede in the future to imports of Dominion agricultural products. The other is a higher scale of tariff duties than that now in operation, which, as we shall see, is designed to secure the same end.

The following table, collated from the recent Government Blue-Book on Colonial tariffs, shows the general character and incidence of Canadian as compared with other Colonial and Indian tariffs :—

Range of Colonial Tariffs in 1903.

Goods.	Canada.	Australia.	New Zealand.	South Africa.	India.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Iron and steel	0 to 50	0 to 12½	0 to 25	0 to 12½	0 to 5
Agricultural machinery, etc. ...	20 to 35	0 to 15	0 to 20	—	0 to 5
Cutlery and tools	0 to 40	0 to 20	0 to 20	0 to 10	0 to 5
Machinery	0 to 35	0 to 20	0 to 20	0 to 10	0 to 5
Cotton yarns and thread	0 to 25	—	0 to 20	10	—
Cotton goods	0 to 35	0 to 25	0 to 25	0 to 25	3½ to 5
Linen, hemp and jute	0 to 40	0 to 25	0 to 25	0 to 10	5
Woollens and worsteds	0 to 35	0 to 25	0 to 20	2½ to 25	5
Earthenware	20 to 35	15 to 20	20 to 25	10	5
Glassware	20 to 35	0 to 25	0 to 25	0 to 10	5
Chemicals	0 to 30	0 to 20	0 to 20	0 to 10	5
Apparel	20 to 35	25	20 to 25	10 to 25	5
Boots and shoes	25	15 to 30	22½	10	5
Clocks and watches...	25	20	20	10	5
Hosiery, etc.	15 to 35	10 to 25	20 to 25	10	3½ to 5
Gloves	35	20	15 to 25	10	3½ to 5
Hats	30	20 to 30	25	10	5
Electrical machinery	0 to 35	0 to 12½	0 to 20	2½	0 to 5
Furniture	30 to 35	20	20 to 25	10	5
Saddlery, etc.	25 to 30	20	20	10	5

The general range of these duties follows pretty closely the progress of the industrial development of the Colonies. It is highest in Canada, which is the most advanced in manufacturing resources, followed by Australia, which comes perhaps second, and afterwards by South Africa and India.

At present, the iron and steel list of the Canadian Customs tariff contains 116 items, of which 33 are admitted duty free; 56 items are subject to duties ranging from 25 per cent. *ad val.* upwards, and 15 items are subject to duties of 5 per cent. to 10 per cent. *ad val.* Besides these, there are 27 items under the head of wire, of which eight are free and twelve are 25 per cent. *ad val.* and upwards. Speaking generally, all iron and steel that can be regarded as the raw materials of subsequent processes are free, as well as such descriptions as are necessary for agricultural and horticultural operations, either in the crude or in the ultimate forms of application. Among the principal items on the free list are rails, shipbuilding iron and steel, rivet iron tyres, tubes, wire rods, spiral spring steel, steel for saws, scissors, cutlery and bicycle chains, steel for the manufacture of bed furniture, surgical instruments, skates, etc. Some of these general exemptions are, however, subject to exceptions, as, for example, the case of steel rails, which are only free of duty when used for a public railway, and are subject to duties when used for electric railway or tramway purposes, or when used for a private railway.

Canadian manufacturers have organised themselves into a strong representative body, designed to promote manufacturing interests throughout the country generally, and to develop on the part of the people an interest and a pride in the growth of national industry. This Association professes to be non-political, but at the same time it loses no opportunity of urging upon the Government of the day, whether Federal or Provincial, what is called "a policy which will encourage manufacturing industries in Canada," meaning thereby a system of tariff duties, and, where deemed to be necessary, or sufficiently insisted on, of bounties as well.

Not content with aiming at making Canada independent of foreign manufactures, the Association seeks to encourage the export trade of the Dominion by special trade enquiries, financial reports, and the work of special representatives in Great Britain and other countries. In regard to machinery the Canadian tariff is strictly designed to aid in the building up within the Dominion of a great national mechanical industry. As illustrating this position, locomotive engines are called or to pay 35 per cent. *ad val.*, although most of them are imported from either the United States or from Great Britain. Other steam engines, boilers, mining machinery, and agricultural machinery are subject to 25 per cent. *ad val.*, except "when imported for use exclusively in mining, smelting, reducing, or refining." Most descriptions of tools and implements, such as picks, axes, hatchets, and saws, are subject to 25 to 30 per cent. The most common of household hardware, such as tacks, sprigs, and nails, pay 35 per cent., and needles of all kinds pay 30 per cent. Mowing machines, self-binding harvesters, horse rakes, etc., pay 20 per cent. Scales and weighing beams, which are everywhere needed, pay 30 per cent., and screws of all kinds pay 35 per cent. Ships built

in a foreign country, on application for Canadian registry, except machinery, pay 10 per cent., and while sewing machines, or parts thereof, pay 30 per cent., sewing machine attachments are admitted free.

Now, a glance at these duties will show that they handicap the imports of all countries over a wide range of manufacturing operations, which is another way of saying that they appear to afford adequate protection to Canadian producers. A tariff which ranges from 20 to 35 per cent. *ad val.* over a great many branches of mechanical industry is not a low tariff. On the other hand, a good many categories are on the free list, and with respect to these, of course up to the present time the Canadians have had no protection.

British Industry under the Canadian Tariff.

To the majority of English manufacturers it is possible that an increase of the duties levied under the Canadian Tariff would render business with the Dominion more difficult, and would therefore be *anathema maranatha!* But this would not in all cases be so, and every commodity should be considered on its merits, and in relation to its own special circumstances. So far as the iron trade is concerned, there are cases in which an increase of tariff duties would largely help, for the present at any rate, British manufacturers. One of these cases is that of steel rails, which are now admitted to Canada free of duty. As the matter stands, the United States control this business, but if a considerable duty was levied, then the preference of 33⅓ per cent. accorded to the British rail-maker—which counts for nothing at present—would be a substantial help against the United States. Britain, which is now practically excluded from the Dominion rail market by the action of Germany and the United States, would then have a better chance.

The same condition largely applies to plates, on which, at the present time, there is a duty of only 5 per cent. A preference of 33⅓ per cent. on a duty of 5 per cent. *ad val.* clearly is of no importance whatever, in helping Great Britain against either the United States or Germany. Hence, those countries have now the opportunity to secure the trade of the Dominion, and they are likely to continue to dominate it, unless and until the duty is so far increased that the preference of 33⅓ per cent. can be of real assistance to Great Britain.

The Pleas for Higher Protection.

Not a few advocates of higher protection for Canadian iron and steel say that it would be beneficial rather than adverse to Great Britain, inasmuch as by doubling the duty the Government would greatly reduce the volume of the import trade to the advantage of the home producers of iron and steel. But while the whole supply from outside sources would thus be cut down, Britain's sales in Canada would, it is believed, be actually increased by the working of the preference. The present tariff is declared to be so low that it is no barrier to the selling of American iron and steel in Canada, and it will scarcely be felt as an obstacle under American over-production. The present tariff, as a whole, is considerable, but then the whole of which it

is a part is small. Take the duty on billets, for example. It is 2 dols. a ton. Thirty-three and one-third per cent. of so small a duty on so heavy a commodity cannot equalise conditions between the over-sea British steel-maker and the next door American maker. But if the general duty were made 6 dols. a ton then the preference would be material. A discount of one-third in favour of the British manufacturer would mean an exemption of 8s. 4d. a ton instead of, as at present, 2s. 9d. a ton.

Again, on certain descriptions of structural steel, the present duty is 10 per cent. The preference of one-third does not amount to more than a cash discount of 3 per cent. If the American tariff of 10 dols. per ton on structural steel was adopted in Canada, England, under the one-third preference, would be in an infinitely better position to take any surplus orders Canada may have to give, and these orders should be considerable for some time to come.

The position is the same all through the iron and steel schedule, from pig-iron to the highest finished article. Canada is buying and must continue to buy her surplus requirements from the three great producing countries, England, the United States, and Germany. Establish a tariff approximating to that of the United States against all countries, giving England a notable preference, and Canadian industries will receive a healthy impetus while England will receive the bulk of the surplus orders given out by the Dominion.

At present certain Canadian manufacturers are favoured by the admission of their raw material free of duty. Thus the forms of steel required for making the following articles are so admitted so long as they are used exclusively in making these articles:—Skates, cutlery buckle clasps, ice creepers, bicycle chain, files, augers, bits, hammers, axes, hatchets, scythes, hoes, reaping hooks, hand rakes, hay knives, straw cutters, windmills, harvesting forks, carriage springs, axles, railway springs, wire fence, mower and reaper knives, clock springs, etc. The exemption from duty of the raw material in these articles has been disapproved by a number of manufacturers in the interests of home makers of the various forms of steel employed. To compensate the makers of the finished articles higher duties on these articles have been recommended. This plan would necessitate the making of very high duties for some of the more elaborated articles, as there would be a series of duties from the rawest upward through the less raw grades until the most finished state is reached.

The abandonment of the rebate provision of the Tariff Act, which requires the return to the manufacturer of 99 per cent. of the duty he has paid on any imported material which he afterwards exports as finished product, has been urged. Mr. Tarte, ex-Minister of Public Works, has declared that the rebates should not be retained.

The Americans have been dumping steel into Canada at prices below the market rates in the States through this provision.

Canadian Ministers on the Protection of the Steel Industry.

In the most recent discussion (1903) of the fiscal question in the Canadian Parliament, the Leader of the Opposition, who proposed a

motion for increase of Protection, pointed out that it was that system which originally built up Great Britain's trade. Britain's output of steel between 1883 and 1901, had, he said, under Free Trade, increased 100 per cent.; but then, "protected" Germany's output had increased in the same period 600 per cent., and the "protected" United States 700 per cent. The Canadian conditions of internal resource were the same as those of the United States, and yet "their neighbour" protected itself by high tariffs. It was idle to contend that a higher tariff would result in the Canadian consumers being robbed by higher prices. There were goods on which duties had been removed altogether, and yet the prices were to-day higher than ever. Sir Wilfrid Laurier, the Premier, expressed himself of a similar opinion. He reminded the House that when the tariff was put on in the late eighties, it was thought that the success of the iron and steel industry was assured; but events had proved so much otherwise that in 1897 the tariff was reduced, and it was impossible to deny that the period of prosperity from then until now had never been equalled. Sir Wilfrid, who is a pronounced Free Trader, referring to the cause of the agitation—the Dominion Iron and Steel Company's want of success—said it was not insufficient Protection which had created the situation, but the speculation in stocks. The ex-Minister of Public Works declared that the want of due Protection had cost Canada 100,000,000 dols. in the loss of steel business alone, while a Government supporter said the agitation was promoted by stock gamblers who had created the situation.

Canadian Textiles.

The Canadian cotton industry has been protected since 1879, and is still not very flourishing. Much money has been sunk in it, the general tendency of Protection being to attract too much capital into such industries. This is followed by cut-throat competition for a while within the home market, the protected factory-owner being prevented, by Protection, from competing abroad; and then the trust stage is reached, and factories are closed to restrict output and maintain prices. A correspondent of the *Economist* declares that the cotton men, so far from being willing to efface themselves for the benefit of Lancashire, declare that the existing preference to Britain is altogether monstrous, and want the Government to increase the duties all round, so that every line of goods may be made in Canada without fear of British or American competition.

The difficulty of finding a true *modus vivendi* in the industrial relations of the Dominion and the Mother Country is indicated by the attitude of the Canadian woollen trade, which has not quite enjoyed the same prosperity as most other branches of industry. They were somewhat assisted lately by the action of the Government in placing a Customs' surtax upon importations from Germany. But they now point to the fact that the importation of woollen goods from Great Britain is increasing by leaps and bounds to the detriment of Canadian mills, that while other industries in Canada have expanded during recent years, the output and prosperity of the woollen industry has largely decreased, and finally that unless immediate action is taken, many mills will be obliged to close down.

In view of these conditions, the Canadian woollen trade recently urged upon the Canadian Manufacturers' Association "the necessity of demanding from the Government an immediate change in the tariff."

Attitude of Canadian Manufacturers.

At a recent banquet in Toronto, the president of the Canadian Manufacturers' Association, in a carefully prepared speech, declared that the Association desired to have the tariff increased till the duties were practically as high as those levied in the United States. This, he argued, would stop "dumping" by the American trusts, and mitigate the depression in Canada when it arrived. He was willing that Canada should grant a preference to the British manufacturer in return for a British preference to Canadian products—foodstuffs and raw materials—but in every instance, the preference to England must leave a sufficient protection to the Canadian manufacturer.

The Liberal Press has been poking fun at the collapse of Imperialist sentiment amongst Canadian manufacturers the moment they are asked to make a sacrifice "for the Empire." They are heartily in favour of Canadian products receiving preferential treatment in the British market—that, in their judgment, would be an excellent thing for the Canadian farmer, and, indirectly for themselves—but when Mr. Chamberlain proposes to create work for the English artisan by breaking down Colonial tariffs, they tell him they will not permit anything of the sort. The Conservative Press endorses the Manufacturers' Association programme.

The more that intelligent Canadians who are not Protectionists reflect on Mr. Chamberlain's policy, the more certain they are that it cannot be reconciled with what may be called the modern Canadian spirit—the desire of Canadians to manufacture for themselves, and to enjoy complete autonomy in commerce and industry. It was this spirit to which the late Sir John Macdonald appealed in 1878, when, a discredited Leader of Opposition, he carried the country on the issue of Protection as against the Liberals, who were for a revenue tariff. It is so strong to-day that the Liberals, back in power again, do not care to preach revenue tariff any more, and are obliged to maintain protective duties, which they used to regard as an abomination.

The general attitude adopted by the manufacturers of Canada is reflected in the following quotation from a speech made by one of the principal speakers at the Congress of the Manufacturers' Association in Toronto, in September, 1903 :—

"We in Canada have come to understand that anything but Protection, so far as our general policy is concerned, under the conditions which we have to meet, means ruin and disaster. Just here, I would like to make clear the policy of the Association. We have been misunderstood in some quarters, misrepresented in others. We believe that the present tariff of Canada should be revised. Six years have elapsed since the last revision. During that time industrial conditions in our country have advanced rapidly, and the advances are becoming more marked in each succeeding year. Our population is increasing, but our imports are increasing much more rapidly, in spite of the fact that we have within our own borders the raw materials necessary for

nearly every industry. United States and German goods are being shipped in at under-valuation prices and slaughtered on our markets. The British preference is seriously injuring many of our industries. What are we losing? We are losing the development of our country, for we are not manufacturing to supply our own needs, and in some cases are sending our raw materials to be manufactured in the United States. We are losing an increased market for our farmers, for we might engage many thousand more Canadian workmen to manufacture goods which are now made for us in other countries. We are losing many of our brightest boys, who find industrial opportunities in the United States, which heretofore Canada has not afforded, while all the time our resources, our capital, and our sons are actually being lavished upon those who would crush our industries and dominate our markets. What do we gain? Let those who advocate a 'standstill' policy answer that question."

In March of 1903, a large deputation of Canadian manufacturers waited on some of the Ministers to urge that the tariff duties should be revised in an upward direction. One speaker—F. P. Jones—pleaded for higher duties on iron and steel imports, urging that "because there is no protection for steel rails, there are no mills for their production."* The manufacturers, however, would not lay details of this business before the Ministers, and this fact appears to have made them suspicious. At any rate, they replied that they had been urged by other interests to leave the tariff where it is.

So far as the political aspects of the Canadian tariff are concerned, it is contended that it is now next to impossible to discover any difference between Canadian Liberals and Canadian Conservatives on the question of the artificial fostering of Canadian industries. The two parties still differ as to preferential trade with Great Britain. The Conservatives contend that the Old Country should have been pressed for some equivalent before the preferential tariff was arranged in 1897, and subsequently increased from 25 per cent. to 33⅓ per cent. But both Canadian political parties are now upholders of Protection, and of liberal bounties in aid of industry, and the Laurier Government has indeed gone a step beyond the Conservatives themselves by initiating a new method of fostering fresh Canadian industrial enterprises.

The Movement of Canadian Exports.

When confederation was accomplished—namely, in 1867—no less than 60 per cent. of the export trade of Canada was to the United States and only 30 per cent. to Great Britain; while as recently as 1889 the proportions were 49 per cent. to the United States and less than 42 per cent. to Great Britain. All that is now changed. In 1898 Canadian exports to Great Britain constituted 64 per cent. of her total export trade, and in 1903 the proportions were 58 per cent. to Great Britain as against 31 per cent. to the United States. A consequence of this great change in the main channel of Canada's export trade is to render her less sensitive to commercial depression in the States. Any diminution in the American demand for her surplus products or any

* The Algoma Works at Sault St. Marie are equipped with a rail-mill.

impairment of the purchasing power of the American people would fifteen years ago have affected 50 per cent. of the export trade of the Dominion; it would now adversely affect less than one-third of that trade. This in itself is a matter of first-rate importance to a young and growing country.

As the matter now stands, it would seem as if there was a greater probability of an increase in the tariff duties of the Dominion than of any movement in the opposite direction. The manufacturers are a much more highly organised body than the farmers, and they, of course, believe that an increase of Protection will be much to their advantage. Their Association claims to have 1,218 manufacturing concerns in its membership, and to represent an invested capital of 400,000,000 dols. (£80,000,000). If the existing preference is continued, or extended on a higher range of duties, British industry is likely to gain, rather than to lose, relatively to the United States, in Canadian markets. At present, and for a long time past, British interests have been losing ground. With a preference of one-third under a very high tariff, the only ground lost by England would be likely to be gained, not by the United States, but by the Dominion.

CHAPTER IV.

The Imperial Congress and Preferential Tariffs.

The British Iron Trade Association having been invited to send delegates to represent it at the Congress of Chambers of Commerce of the Empire, held at Montreal, in August, 1903, I was selected by the Board of Management to represent it there, and was desired to prepare a Report on the special subject of the Congress, and on the general subject of Canadian conditions, more especially as affecting the iron and kindred industries, for the information of the members of the Association.

The Imperial Congress of 1903.

The Congress in question was attended by representatives of commercial bodies from all parts of the Empire, and considered many matters of Imperial interest. Among these, the *pièce de résistance* from every point of view was the subject of Imperial fiscal policy. The discussion of this subject at Montreal by the representatives of so many commercial organisations would be at any time an important event, but its importance on this occasion was much accentuated by the prominence which had been given to Canada by Mr. Chamberlain in his various speeches on tariff reform, and by the indications afforded from time to time by the Canadians themselves that they desired to enter into closer commercial relations with the Mother Country. The discussion of the subject occupied the attention of the Congress for the greater part of three days, and even then more than forty delegates who desired to speak were deprived of the opportunity by the necessity for applying the closure. The general tendency of the discussion was to show more or less division of opinion among the English, and almost complete unanimity on the part of the Canadian delegates, as to the expediency of a preferential tariff. The ultimate issue of the discussion was the unanimous adoption of a resolution recognising the advantages to the Empire of "a commercial policy based upon the principle of mutual benefit, whereby each component part of the Empire would receive a substantial advantage in trade as the result of its national relationship, due consideration being given to the fiscal and industrial needs of the component parts of the Empire." The Congress further resolved to urge upon His Majesty's Government "the appointment by them of a Special Commission, composed of representatives of Great Britain, and her Colonies, and India," to give effect to this resolution.

No one who had not enjoyed the opportunity of mixing with the Canadians in different parts of the Dominion, then and subsequently,

could easily understand the great amount of interest which was taken in this discussion. It appeared to be the one subject of conversation everywhere. When the resolution had been adopted, as it was, by acclamation, the whole of the large audience rose and sang the "National Anthem" with a quite extraordinary fervour, and everyone appeared to feel as if some great thing had happened, that was certain to benefit everybody. Nevertheless, when the resolution is examined in cold blood, it really seems as if it committed nobody to anything. It does not declare in favour of a preferential tariff, or, indeed, of any alteration whatsoever of existing conditions. The Mother Country is left as free as air in relation to her fiscal policy. The Canadians are in no way pledged to further preference, or even to a continuance of that already accorded. Here and there, indeed, there were what seemed to be hardly veiled threats that if the Mother Country did not do something more for Canada, and do it soon, the existing preference would be withdrawn. The key to this situation is to be found elsewhere. Within a month after the Montreal Congress, the Canadian Manufacturers' Association held their Annual Conference at Toronto. The subject of the trade relations of the Mother Country and the Dominion was then again considered. More than one speaker emphatically declared that no further preferences were to be granted to the Mother Country with the consent of Canadian manufacturers. Complaint was made that Canadian industry had suffered by the preferences already extended to England. And yet the principal speech, delivered on behalf of the preferential policy at Montreal, made by Mr. W. F. Cockshutt, a prominent member of the executive of that organisation, was, more or less, pivoted on the principle that "a preferential arrangement within the Empire will be the salvation of the British Empire, and will tend to hold us together." Of course, I need hardly point out that "an Empire policy for mutual benefit," to use Mr. Cockshutt's words, is hardly compatible with declarations which practically refuse to consider reciprocal preferences, and that a preference on the one side must, *à fortiori*, be more or less adjusted to preferences on the other, if a preferential policy is to be adopted at all.

Another feature of the Congress, which must have struck many of the English delegates, was the more or less subdued tone of resentment which pervaded many of the Canadian speakers—resentment, apparently, that the Mother Country had, more or less, neglected Canada in the past, and had not already done anything to reciprocate the preferences voluntarily and unconditionally offered by that Colony to British trade. Senator Drummond appeared to find it expedient to answer what he called the opinion that the preference so given "had been of little value in promoting the trade between the two countries," and he sought to do this by quoting figures designed to show that in the six years over which the preference has been in force, its aggregate value to British commerce had been nearly 14 million dollars. At the same time, the Senator declared that "a preferential tariff, framed on the principle of a general rebate over the whole list of imports," was "a totally unworkable arrangement." He argued that while a rebate of $33\frac{1}{3}$ per cent. on duties of 5 to 10 per cent. amounts to very little,

yet a similar rebate on a duty of 30 per cent. "may be too much, and may bear hardly upon some local industries."

Tariff Disparates.

Considerations of this kind raise the fundamental question, which has to be faced from the outset, as to the extent to which the Canadians are prepared, under any conceivable circumstances, to make further tariff concessions. Everybody appears to feel that a Zollverein arrangement—Free Trade within the Empire—is not likely to be entertained by any of the self-governing Colonies; and, indeed, the word was hardly once mentioned at the Montreal Congress. But the anomalous part of the business appears to be that while Canada is asking for preferences that will directly benefit the agricultural interests, those interests have nothing to offer in return, and the equivalent, if any, must come from the manufacturers. In other words, absolute Free Trade could hardly hurt any branch of Canadian agriculture, but it would be violently resisted by the manufacturing interests. If, however, the agricultural interests failed to obtain any preference from the Mother Country, they might resist all the attempts of the manufacturers to increase the tariff duties, and might demand their reduction, or even their repeal; so that it is clearly the interest of the manufacturers to fight the battle of the agriculturists, so far, at least, as is consistent with their own safety. The Canadian agriculturists ask* for duties of 1s. 8d. per quarter on wheat, and of 1s. 8d. on 280 lbs. of flour imported into the Mother Country from abroad, and they add as a *sequiter* that if Canada had 200,000 more farmers "we will supply all the breadstuffs, cattle, butter, cheese, and provisions that are consumed in the British Isles."† I should add here, that some prominent Canadians are of opinion that it is possible, but extremely undesirable, to force the pace; and that, in their opinion, it would be better to adopt no preferential arrangement, in any case, until the capabilities of the Dominion for the export of foodstuffs are more largely developed. It is suggested, however, that within six or seven years Canada might be able to "fill the bill" of British food supply.

While Mr. Cockshutt was the Ajax of the Canadians, Sir Wm. Holland was the Agamemnon of the British delegates, as a finished and powerful speaker. Some of his arguments were fully as powerful as his oratory. He answered the plea that most of the efforts to increase the trade between the Mother Country and the Dominion had been made on the side of Canada, by pointing out that while, during the last thirty years, the imports of Canada from Great Britain had fallen off by nearly 20 per cent., the imports of Great Britain from Canada had increased by nearly 300 per cent. To the proposal of Canada for a preference on foodstuffs, he replied by showing that Canada was already placed on the same footing in British markets as the British farmer, who is "not allowed one atom of protection."

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* Speech by Mr. R. Meighen (Montreal Board of Trade), at the Congress. *Official Report*, p. 58.

† The immigration of farmers into Canada is now proceeding at the rate of 20,000 to 30,000 per annum.

Answering the idea that "larger benefits would lead to more affection," he argued that "if that is correct, it is obvious that as we take more than twice as much from you as you take from us, we must love the Colonies twice as much as the Colonies love us." He emphasised this point by a story that conveyed a moral which struck home,—the story of a nurse who, having been engaged to fill a new position at £12 a year, and having been notified that she would be expected to love the children, replied that "if you want me to love the children, it will be £2 a year extra."

The Iron Trade at the Congress.

In the course of the fiscal debate I was afforded the opportunity of saying something on behalf of the iron trade. It will probably be expected that I should put on record that my main arguments were that "in the trade with Canada, Great Britain is greatly hampered by competition on the part of the United States," that "British ironmasters do not admit the existing condition of things resulting from such competition to be inevitable," and that "they feel that they would have no cause for apprehension, were it not for the system which enables producers in Germany and America to combine to regulate prices at home, while they dump their surplus on foreign countries like our own, at almost any price they can get." In replying to the question of the preference needed to enable British manufacturers, without protection, to compete in Canadian markets with those who enjoy whatever advantages that system can confer, I expressed the opinion that a preference of 33⅓ per cent. is not sufficient to render the iron trade of the Mother Country any substantial help.

The Canadian Manufacturers' Association on Preference.

The Canadian Manufacturers' Association, at their last annual meeting, held in September, 1903, passed the following resolution:—

"That whereas: Foreign manufacturing firms, especially in European countries, are continually taking advantage of the preference granted to British goods entering the Dominion of Canada,

"And whereas: This abuse of the preference is detrimental, not only to Canadian manufacturers but to British manufacturers as well, and is thus defeating the very purpose of preferential legislation,

"Be it resolved: That this Association would respectfully urge upon the Dominion Government the desirability of amending the present preferential regulations as applying to British goods so as to increase the required percentage of British labour from 25 to 50 per cent. of the value of the goods."

The views of the leading manufacturers of Canada were presented to the Congress by Mr. Ellis, the representative of the Canadian Manufacturers' Association, who, on the question of tariffs, spoke as follows:—"I want to be perfectly frank, and I wish to say that as far as the manufacturers are concerned we believe we have gone far enough, and we will oppose strenuously any reduction in the present duties, and any increase in the preference." Mr. Ellis was full of generous acknowledgments of the value to Canada of her trade with Great Britain. Canada had a balance against her in the trade with the United States of

46,000,000 dollars. In the trade with Great Britain there was a balance due to Canada of 51,000,000 dollars. By the sale of Canadian produce to the United Kingdom, the debt to the United States is liquidated, and a surplus still remains in the hands of Canadian dealers.

The Canadian people have, no doubt, suffered in their trade relations with Great Britain, by the dishonesty of Continental firms, who have sent goods into Great Britain with a view to export to Canada under the rebate conditions allowed to that country. It might be supposed that the British Trade Marks Act would cure this evil by indicating—as it should do—the country of origin, but the Canadians affirm that this is not the case, because it often occurs that the brand or ticket may be taken off or obliterated in such a way that there is no means of identification. They also affirm that, apart from textiles, it is most difficult to say whether industrial products have been manufactured on the Continent or in the United Kingdom. It is certain that in the case of iron, steel, hardware, and machinery, except by special brands, identification is difficult—so much so, that an ordinary appraiser could not say what the country of origin really was.

Speaking recently on this subject before the Canadian Manufacturers' Association, Mr. P. H. Burton said :—"The only remedy I believe that will be at all able to prevent this trouble (of foreigners claiming preferences) will be the establishment of some person in London. Entries come from there, and these invoices are presented, and they go through the Customs and under the present Customs' laws; if there is any fraud, or suspicion of it, the Government has the right to go back for three years, and not only exact the amount of duty which has been underpaid, but also to exact the full value of the article upon which the duty has been underpaid. This is such a penalty that those concerns which are respectable and hold a large stock of goods in this country dare not, if they wanted to, permit these frauds because the risk is so great; but those people who take import orders, and have very little in stock that the Government could come down upon, do these things with impunity. Not long ago one such concern was hauled up, and, even where the evidence proved they had made 60,000 dollars out of what they had done they were let off with 30,000 dollars.

"I remember that an American importer was once allowed to come into this country and sell surplus stock out of bond. The Government made it a condition that goods would have to be invoiced where they came from, and this firm had the invoices printed in New York, purporting that their goods would be invoiced from Yorkshire. You could identify those invoices by the paper, and by the type that was used, and could see at once that such an invoice was never printed in Yorkshire, although that was the place where it purported to come from. When this surtax comes in you have twice the incentive to fraud that there was before."

The general view that appears to be entertained by business men in the Dominion is, I think, pretty accurately reflected in the speech at the Congress of Mr. Bell Irving,* of Vancouver, who said "Canadians thought that the settled convictions of Free Trade had promoted a sound sleep

* *London Chamber of Commerce Journal*, January, 1904, p. 7.

which had lasted two generations, and that it was now time for the Mother Country to wake up. He could confirm what Mr. Brassey had said as to the wonderful possibilities of wheat-growing in the Canadian North-West. There were in Canada 350,000,000 acres of wheat land, of which 250,000,000 were first class; that should be amply sufficient for our requirements and a great expansion besides. Canada was once, more or less, a Free Trade country. It suffered under that policy, and its manufacturers were at the feet of their competitors in the United States. A national policy was then adopted, and from that time Canadian trade had progressed. Under a policy of preferential trade, Canada would now have had a population of from fifteen to twenty millions. The proposals of Mr. Chamberlain had been a settled conviction in Canada for practically a generation. From the Atlantic to the Pacific, Canada was solid on the subject, and they received with enthusiasm the news of Mr. Chamberlain's campaign. It had become an Imperial duty that we as an Empire should be self-sustaining; we were able to produce, and ought to produce, practically all that the Empire needed. Why, therefore, should our trade be given away to foreigners?"

The Tariff Preference and British Competition.

A good deal has been said as to the injury done to Canadian industries by the preference accorded to British goods. This, however, is more or less a doubtful claim. There is very little evidence that the British imports injure Canadian trade. It may be, and, I believe, is, otherwise with the imports from the United States. Mr. Charles Yates, a delegate to the Congress of Chambers of Commerce of the Empire, speaking before the Leeds Chamber of Commerce since his return, said "the Canadian manufacturers claimed to have great difficulty in competing with England in woollens and worsteds, although there was a barrier of 30 per cent., including freight and other charges, against this country in the Canadian market. It was said that many mills were entirely closed, that others were closing, and that none were busy owing to the tariff preference given to Great Britain. He noticed, however, that in a list of firms who had closed entirely or partially owing to the tariff, there were some who had been out of business from six to ten years—long before the tariff concession was made to England. As a market for British goods Canada showed exceptional possibilities for all classes of trade if properly exploited. The works and factories which the delegates saw were surprisingly up-to-date, but many industries seemed to lack capital, particularly the mining industry, due almost entirely to a number of firms starting on too big a scale instead of being content to go up gradually. The result had been shortness of working capital, high rates of interest for loans, inability to grapple with the fluctuation of markets, and gradual decay. The country was panting for more capital, and for more immigrants of the right class."*

The delegates were on their All-Canada trip, travelling from Medicine Hat to Winnipeg, when a cablegram was received announcing the resignation of Mr. Chamberlain, and the possibility of Lord Milner being asked to take up the position of Colonial Secretary. Naturally,

* *London Chamber of Commerce Journal*, January, 1904, p. 23.

the announcement was received with much interest and not a little surprise. At first considerably doubted, it was ultimately regarded as having some basis of truth, and then the party began to discuss the question of the influence which the reported resignation was likely to have on the whole subject of tariff reform. The conclusion arrived at was not entirely one of disappointment. Mr. McFee, one of the principal Canadian grain merchants, and a past-President of the Montreal Board of Trade, declared that he was rather pleased than otherwise with the turn that events had taken, for, said he, "things are not yet ripe for a preferential tariff." He argued that Canada did not yet produce, and was not likely for some time to come to produce, enough wheat to justify a preferential arrangement with the Mother Country. When, however, the Dominion could produce enough to provide for export twice the quantity of wheat now available, a preferential duty might be imposed without much fear of a reaction. He also hinted at the possibility of the United States drawing off a large part of the existing supply of Canadian wheat by remitting the present import duty of 15 cents per bushel, in which case Canada would have even less to send to the Mother Country than she now seemed to have, inasmuch as the United States, under such conditions, would be the nearest and the most convenient market, whereas, if nothing were done until Canada had a surplus of assured dimensions, no such action need be apprehended. Such, I have reason to believe, are the views of other thoughtful men in the Dominion.

Attitude of the Canadian Press.

The Canadian Press, from one end of the country to the other, had much to say of the Congress, and especially of the discussion on fiscal policy. One of the leading Montreal journals wrote as follows :—

> For the first time the business men of the Empire met outside its centre, and the centre of the world's business. They are come to Montreal in response to the growing Imperialistic sentiment on the eve of a possible change fraught with weal or woe for the future of the race, and the whole trend of the day's proceedings showed that the members of the Congress realised that much depends on their deliberations. Like the British Constitution, the British Empire has grown, but has never been made ; but now the days of *laissez faire* are over. The children are yearning for a settled place by their mother's side, and she is ready to grant it them, if only it is possible. So, from the introductory speeches to the close of the day's proceedings, this spirit was manifest. Delegates from Canada, delegates from the Old Land, were equally cordial, equally anxious to get nearer and closer to each other, but the latter realising a little more clearly the difficulties, within the Colonies and without the Colonies, that must be overcome before definite steps are taken.

Another leading Canadian journal published the following interesting observations on the subject of a preferential tariff :—

> There is no doubt in the world that if a preferential tariff in favour of Canada were given thousands of American farmers would swarm across our borders and take up the greatest wheat-growing land in the world, and that is what worries our Scotch-American friend. They have lost about 150,000 splendid farmers in the last two years, and it is a strange thing that whenever Americans come into Canada like that and see the laws preserved so much better than they have been accustomed to, they just scorch the grass running to take out their naturalisation papers.
>
> The only thing lacking in Great Britain is a little education on the subject of one of her greatest Colonies, and I have every hope that the visit of the newspaper men for the meeting of the Chambers of Commerce in Montreal, and the tour of the Members of Parliament in Canada, will have the effect of opening the eyes of Great Britain to a greater extent than ever before. It's wanted.

The Montreal correspondent of the *Economist* has, since the Congress, written the following remarks on the subject of preference—

Mr. Chamberlain's latest plank, to give a preference of 10 per cent. to Canadian manufactured goods, is regarded here, I am sorry to say, as a bribe to induce Canadian manufacturers to submit with grace to a Canadian preference that would really prefer. But the Canadian manufacturer, as a French-Canadian Protectionist paper says, "is not going to give up his home market to Englishmen in return for a very slender chance to compete in England with Englishmen." "Why," says the same paper, "that would be dropping the bone for the shadow with a vengeance." As the signs of depression multiply, the conviction that Mr. Chamberlain's scheme would hurt if not ruin them finds forcible expression amongst the manufacturers. The other day at Sydney, where about half the iron and steel plant is idle, I was assured that every man in Cape Breton, if not in Nova Scotia, would resist it if it meant the sacrifice of the Canadian market to the British iron master. One hears the same story wherever distress has set in, notably amongst the woollen men, who claim that the existing preference is unfair to their industry, and are sure that a heavier cut in behalf of British mills would wipe out all the Canadian factories that produce the finer kinds of goods.

The *Canadian Manufacturer*,* of Toronto, in a recent editorial, stated that "public sentiment in Canada regarding Imperial Federation and preferential trade arrangements within the Empire has experienced a very decided cooling off as a result of the award of the Alaska Boundary Commission, decided by the casting vote of Lord Alverstone, the Chief Justice of England, and the people are again giving ear to proposals for reciprocity with the United States. The willingness for preferential trade with Great Britain is not as strong as it was previous to the decision. . . .

"The political allegiance we owe to great Britain has had its force in the belief that the interests of Canada were safe in her keeping and would be upheld at all events. We now find that such is not the case, but rather that Canada is to be sacrificed whenever the political exigencies of Great Britain require it. Canada would be glad to continue her fealty to Great Britain if it were appreciated. Canada has always been a loyal daughter in her mother's house, but she must and will be mistress in her own. It may be that we are at the parting of the ways. Heretofore Canadian relations with other countries, particularly with the United States, have been adjudicated at Washington or London, Ottawa having but little to say or do in the matter other than consent to what had been done and to register the decision. . . .

"British ingratitude and sycophancy have taught Canada a painful lesson which should not be forgotten, a lesson which should teach us to depend upon our own nerve and muscle for our position and success in life."

A recent writer in the *Times* has the following observations on the extent of the preference already granted to Great Britain by the Dominion :—

"The Canadian preferential tariff is a solid reality, under which British trade is stimulated and growing. It is said that it has not materially enhanced the British share of our trade, but is it a small matter? The special rebate granted by Canada to British goods amounted :—In 1898, to 927,133 dollars ; 1899, to 1,961,764 dollars ; 1900, to 1,880,324 dollars ; 1901, to 2,640,071 dollars ; 1902, to 2,864,615 dollars ; 1903, to 3,534,394 dollars, or a total of 13,808,301

* The official organ of the Canadian Manufacturers' Association.

dollars. And this does not include the period from April 23, 1897, to July 31, 1897, during which time no records on a separate form were kept. So that we are justified in saying that the remission amounts in round figures to fourteen millions of dollars, or, say, the price of a couple of battleships. But the foregoing figures are made up to June of each year, and before the end of 1903 our returns will show a still larger increment. For example, take the produce of our sister Colonies in the West Indies—sugar. The average importation of British Island sugar into Canada for three years preceding the preferential tariff was 10,913 tons. Since the tariff came into force it has averaged 20,831 tons, and I am in a position to know that the importations of 1903 will exceed 60,000 tons."

The Merits and Demerits of Preferential Policy.

A great deal has been written and spoken of late years as to the preferential policy already adopted by the Dominion, and proposed to be adopted by the Mother Country—or, at any rate, by that section of the tariff reformers which is represented by Mr. Chamberlain. In the course of this controversy, it has been said that the conduct of Canada in giving the Mother Country repeated preferences was purely disinterested, or inspired by a lively sense of favours to come, according to the point of view adopted. The Montreal Congress had much to say on the whole subject, and the resolution which it ultimately adopted clearly pointed to the prospect of the extension of the system of preferences with a view to the material advantage of the high contracting parties.

One of the questions that came before both the delegates to the Montreal Congress and the Canadians themselves again and again was that of what would happen if the Mother Country failed to reciprocate Canadian preference in any way. Would the existing preference in that case be withdrawn? More than one speaker at the Montreal Congress hinted that some such result might be expected. There is, of course, no manner of stipulation as to the duration of the concession, so that it may be withdrawn at any time. It goes without saying that it could hardly be withdrawn without causing a good deal of resentment and strained relations in different quarters, but that is another story.

The difficulties in the way of assisting England by a preference were pointed out in a recent speech by Mr. G. E. Drummond, a pig-iron maker in Canada. He said that one of the great difficulties that England had in getting a portion of Canadian trade to-day was that the Canadians were Americanised thoroughly in the goods used. "There is hardly a lock on your doors that is not an American patent, or cutlery or anything else that you use which has not been Americanised, and by what? By our tariffs in the past. . . . Our money is pouring over the border to purchase American goods, and our men are following that money, and in the United States Canadians are producing goods to supply you in Canada. Only the other day I met an American manufacturer from Detroit, who was considering the question of putting a great deal of money into Canada. He said to me unless your present tariff is revised I will continue to supply you from Detroit. Revise your tariff, Americanise the tariff if you will, in principle, and I will come on to the Canadian side and produce."

Mr. Drummond proceeded to advocate a higher tariff on the products now imported into Canada from the United States, so as to stop or, at any rate, reduce the encroachments of the latter.

It is a knotty problem in *la haute politique* whether it is not desirable to carry the goodwill of the United States in any fiscal arrangements made between the United Kingdom and the Dominion. It would certainly be well to avoid, if possible, "antagonising" that great country. Some fifteen years ago, a Canadian writer expressed the opinion that if an Imperial Federation were formed next month one of the first proceedings of the Central Authority would be to endeavour to establish some sort of commercial union between the Dominion and the States, and he pointed out that the Imperial Council would do so because, as the Federated Empire would come into contact with the Great Republic only on the Canadian frontier, to preserve peace, and perfect goodwill with the United States would be one of the paramount objects of such a Federation. "Unless this could be done," he argued, "Canada would be worse than useless to the Federation. She, and she alone, would involve all the other British countries in liability to get at loggerheads with the wealthiest nation in the world. But if perpetual peace between the Dominion and the United States could be secured, then Canada would be a most valuable member of the Imperial Federation. With her entire southern frontier open to receive munitions and supplies from the enormous resources of a friendly United States, Canada could easily protect herself against Russia, France, Germany, or all of them put together, and could at the same time put considerable forces at the disposal of the Central Imperial Authority.*

The United States cannot be expected to look on entirely unmoved while this matter of mutual preference is being considered. It need hardly be said that any extension of the preference now conceded by Canada would injure American manufacturing industry, while any preference conceded by the Mother Country to Canada would be likely to damage American agricultural interests. In either case, therefore, America stands to be the loser.

This fact has stimulated a wide-spread desire in the United States for the adoption of reciprocity with the Dominion, and the steps taken with a view to the maturing of this movement may be regarded as the reply of the United States to the demands for preferences.

The New England protectionists are making a vigorous fight against the line of reciprocity leagues arrayed across the continent, which are working for freer trade relations with Canada. They are largely concerned with manufacturing interests, but they object to any free interchange of natural products, that being said to be the only ground upon which Canada will agree to reciprocity. It is argued by them that, to begin with, all reciprocity treaties are unconstitutional, that as a matter of policy they are pernicious, establishing inequality and discrimination in dealing with foreign customers, disintegrating the protective system and being a "thinly disguised movement in the interest of Free Trade."

The subject of the possible discrimination by Canada against the United States by preferences to the Mother Country has been a good

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* *Toronto Globe*, February 25th, 1889.

deal discussed in influential Americal journals. One of these recently presented the case in this form :—

"Both Balfour and Chamberlain talk about this being no discrimination of which any nation would have a right to complain, because the Colonies are an integral part of the British Empire ; but they are both fond of referring to Canada, Australia, and New Zealand as 'self-governing Colonies,' and those countries make their own tariffs. This fact puts them practically in the category of independent nations so far as commercial relations are concerned. They can discriminate quite independently of Great Britain, and when they do so they are likely to be subject to discrimination like other nations. Germany is quite right in regarding Canada as independent of Great Britain in her tariff relations, because she is so as a matter of fact, and acts upon her independence in her legislation. If Great Britain should join the Colonies in a policy of discrimination the principle would not be changed so far as other nations are concerned. It would be a discrimination against them and in favour of Colonies that are 'self-governing' and in their commercial relations on the footing of independent nations."*

The *Times*, in July, 1903, published a letter from Mr. Andrew Carnegie, in which he said that it will be found impossible for Great Britain to discriminate in favour of Canadian products against those of the United States without inaugurating a war of tariffs, "in which she will suffer defeat, as she did before when she tried to enforce the same policy." Mr. Carnegie proceeded to point out that the United States could compel the restoration of equal treatment, declaring that "a word from the President cancels the privilege now generously extended to Canada of reaching open American ports through American territory with all her exports and imports, free of duty, for five months in the year when her own ports are ice-bound. She uses the privilege all the year."

The general features of the great problem of preferential trade have now been put before the reader, both from the Canadian and from the American points of view. Much remains unsaid that it would be desirable to say. But it will be seen that the matter is by no means so simple as it looks, and that the Government of the Dominion have a difficult row to hoe. They have first of all to hold the scales as evenly as possible between the agriculturists and the manufacturers at home. They have to consider what inducements and considerations can be offered to the United Kingdom to secure a preference for Canadian products in British home markets. They have to take care that any such consideration shall not prejudice Canadian industries, which, freely translated, means that it must be given at the expense of the United States. They must duly and anxiously consider the attitude which may be adopted by that country in consequence of a discrimination against her. They must, on the other hand, consider whether a discrimination in favour of the United States would not pay better in the long run. And they have to give heed to the possibility that owing to the conditions laid down by Mr. Drummond, and elsewhere named in this book,† preference may be given to the Mother Country

* *Journal of Commerce*, New York, December, 1903.
† *Vide* chapter on "The Relations of the Dominion and the Republic."

without allowing the end in view to an extent commensurate with the friction and resentment that may possibly be created elsewhere. To all this must be added the fact that the Canadian manufacturers are not fond of the preference, and would stoutly oppose any attempt to extend it.

The Excursions following the Congress.

Having said so much as to the Congress itself, I may now proceed to say something as to the remarkable excursions that followed the Congress—excursions that embraced a total railway journey of more than ten thousand miles over all the principal railway lines in the Dominion, from Cape Breton on the Atlantic, to Vancouver on the Pacific. This programme of excursions was arranged by the Montreal Board of Trade, acting not only for the Government of the Dominion and for the railway companies concerned, but also on its own behalf. The responsible organisers were Mr. Hodgson, the President of the Montreal Board of Trade, and Mr. George Hadrill, the Secretary, with Alderman Herbert Aimes, one of the executive at Montreal. The trips were arranged in three sections. In the course of the combined trips, the party had the opportunity of seeing almost every phase of Canadian scenery, industry, population, and life, and it is not too much to say that from every point of view it afforded, not only a liberal education, but a constant series of surprises to the delegates, many of whom appeared to have started with but a poor opinion of the climate, scenery, and resources of the country. Some thirteen years before, in the commercial capital of the Dominion, I was, with some friends, being entertained at a banquet by the hospitable Corporation, when I was asked to propose the toast of "The City and Trade of Montreal." The official account of what I then said states that I "alluded to some erroneous impressions of Canada's climate, and mineral and agricultural resources, which had, until very recently, at all events, prevailed in England," that I "referred to the commerce of Canada with Great Britain," and that I "made suggestions with a view to the future development of trade between the two countries,"*—and the record adds that the toast was responded to by Sir Donald Smith (now Lord Strathcona). I mention this because it affords me the opportunity of adding that the changes which have come over Montreal in particular, and Canada in general, in the interval, have been truly marvellous. Sir William Dawson, at the same banquet, declared that "the Canadians were content, for the present, if, by only sending a little beef to England, they keep up the connection with the old country." Those of us who travelled from Atlantic to Pacific, and were at the Montreal Congress, found that this modest ambition is a thing of the past, and that the Canadians are now, not only aiming at, but within measurable distance of, being ready to supply the Mother Country with the great bulk of her foodstuffs.

The general characteristics of the industry and economic conditions of the various Provinces traversed by the party of delegates are dealt with elsewhere in this volume, but this may be a suitable place to put

* *Journal of the Iron and Steel Institute, special volume*, 1890, p. 473.

on record the high appreciation held by the delegates generally of the unvarying consideration and thoughtfulness shown by those who had charge of the trips, of the admirable character of the arrangements made both for travel and commissariat, of the prodigal hospitality offered by all the communities visited, from Halifax on the Atlantic to Vancouver and Victoria on the Pacific, of the unfeigned welcome of the rank and file of the people with whom we were brought into contact, and of the splended provision made for affording us information on all sorts of subjects, both by printed books and pamphlets—some of them *editions de luxe*—and by oral intercourse of the most pleasant and inspiring kind.

CHAPTER V.

The Reciprocity Movement.

The future trade relations of Canada with the Mother Country are likely to be profoundly modified by the character of its relations with the United States. If a reciprocity treaty were now to be negotiated between the Dominion and the Republic, it would be likely to prejudice the interests of British trade in both. This is a result that not a few men of position are working for in the United States, and it is an issue that has not a few friends in Canada, although not perhaps so many as it had some years ago. The situation is one that calls for an early agreement between the Dominion and the Mother Country of such a character as would be likely to checkmate the reciprocitarians on the other side of the line, if British interests are to be adequately protected.

Again and again, while in Canada, I heard Canadian manufacturers state that if no commercial arrangement is made shortly with the Mother Country, there is a great danger of a reciprocity treaty being made with the United States, in which case the hands of Canada would be tied. They also explicitly declare that without such a preference there is little chance of the present arrangement in favour of British imports being continued. So far as the former matter is concerned, two attempts have already been made to bring about such a reciprocity treaty, and a Joint Commission, which still nominally exists, was appointed to deal with it. The negotiations were suspended during the consideration of the Alaska difficulty; but recent overtures have been made with a view to re-opening them; and these overtures may possibly be accepted, unless, at least, some understanding is arrived at between the Mother Country and the Colonies of a more definite character than that which now exists. As regards the question of the continuance of the existing preference to British goods, Mr. Fielding, the Minister concerned, stated some time ago that Canada might have to withdraw it, and it is generally felt that Canada is hardly likely to continue to play into the hands of the Mother Country without some more measurable equivalent than that now existing. Hence, there was special significance attached to the words of the Governor-General when, at the banquet given to the Chamber of Commerce delegates in Montreal by the Board of Trade of that city, he stated that we are now at the parting of the ways.

Those who have made themselves acquainted with the history of the subject will remember that a reciprocity treaty was signed at Washington in June, 1854, providing for mutual rights of fishing in certain Canadian and United States waters for free interchange of the products of the sea, the soil, the forest, and the mine. This treaty allowed the

Americans the use of the St. Lawrence river and the Canadian canals on the same terms as British subjects, and gave the Canadians the right to navigate Lake Michigan. The treaty came into operation on March 16th, 1855, and was to last ten years, and it terminated on March 17th, 1866, in consequence of notice given by the United States. The Treaty of Washington was signed on May 8th, 1871, and in 1885 the fishery clauses of this treaty were cancelled by the United States. In the meantime, in 1879, the Canadian Government had committed itself to a system of protection under the name of a "National Policy," and that system has since been accepted as the only one adapted to the economic needs of the country, with certain readjustments at later dates.

So far as the existing situation is concerned, it was only in October, 1903, that the Toronto correspondent of a leading London daily stated that Canadian protectionists were glad to hear of Mr. Chamberlain's resignation, because they were better able to continue their efforts to increase the tariff or protection against our industries, and thus to some extent to clear the way for reciprocity with the United States. The same journal added that Canadian opinion more strongly favoured those two courses than that of reciprocity with Great Britain, notwithstanding the much boasted preference given to Great Britain.

Industrial Canada, which represents the Canadian Manufacturers' Association, in October, 1903, declared that "a great danger to Canada was the possibility that the Canadian-American Joint High Commission may again meet. Some months ago the Canadian Government received an invitation from the United States Government to renew the negotiations that were broken off in February, 1899. That invitation has not yet been accepted, chiefly because the Canadian Government has been so occupied with other matters that it has been impossible to fix a time for a meeting of the Commission, but partly, no doubt, because Sir Wilfrid Laurier is not certain whether it is advisable to resume negotiations."

On the other hand, it will be remembered that in November last (1903) Representative Williams, of Mississippi, minority leader in Congress, introduced a resolution that "the House views with pleasure, and endorses the steps taken by the President of the United States toward reconvening the Joint High Commission appointed by Great Britain, the Dominion of Canada, and the United States, for the purpose of considering and agreeing npon freer and more amicable trade relations between the United States and Canada." Mr. Williams also introduced a Bill providing that the duties now imposed by the Dingley Bill "shall be reduced 20 per cent. on all articles being the growth and product of such countries as do now, or may hereafter, admit the natural products of the United States to their markets free of import duties." This action is said in some quarters to have a very influential backing in both countries.

Again, an organisation known as the National Reciprocity League has lately been established with branches in different sections of the United States, and through it very active measures are being taken to create a sentiment favourable to reciprocity. A circular recently issued by the Minnesota Branch of the National Reciprocity League says :—

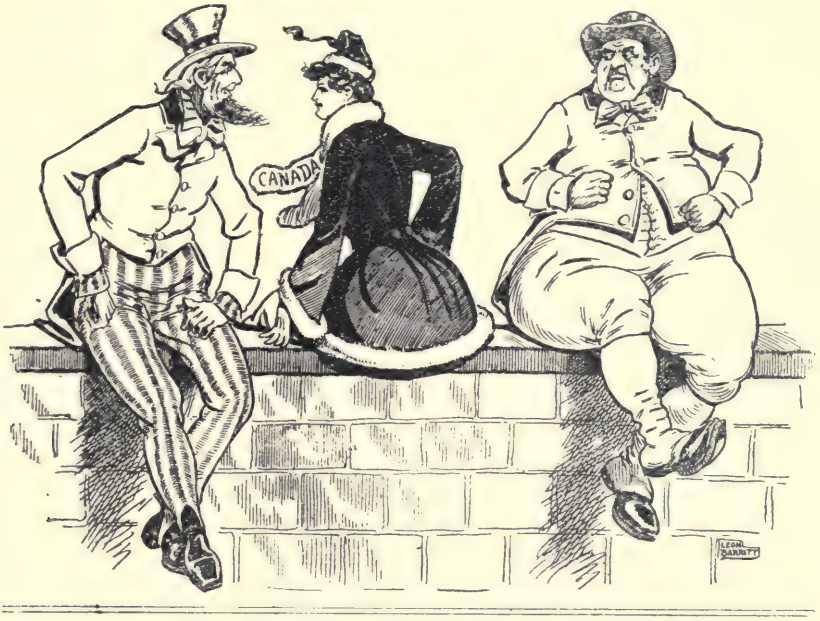
"We are at the point where relations with Canada cannot remain

as they are—they will soon either be better or worse. Unless a reciprocity treaty is soon arranged Canadian tariffs will be raised, especially on our manufactures. We feel confident that by a proper effort on the part of the business interests which would be benefited, we can secure a treaty providing for some reduction on certain lines of manufactures, especially farm machinery and allied commodities. . . . By proper effort such a treaty could be secured as will be beneficial to the manufacturing and commercial interests of the United States."

The Report of the Canadian Manufacturers' Association, read at the last Congress in October, 1903, contained these paragraphs :—

"Owing to the fact that a strong movement is on foot in the United

TRYING TO MAKE JOHN BULL JEALOUS.



FROM THE AMERICAN "ECONOMIST."

States to secure a reciprocity treaty with Canada, your Committee believe the time is opportune to place on record the views of the Association on this question. It is the manufacturers of the United States, who now have a tariff more than double our own, who desire reciprocity with Canada, and who are waging the energetic campaign towards this end throughout their country.

"Under the present conditions, it is beyond question that Canada would suffer from any arrangement which would give to the producers of the United States a larger hold upon the Canadian market than they have at the present time. Canada has shown that she can prosper without the aid of the United States, and there is no desire on the part of our people for a reciprocal arrangement with that country."

An address made by the President at the last annual meeting of

the Canadian Manufacturers' Association contained this paragraph on the same subject :—

"This agitation in the United States will do Canada no harm, provided the Canadian Government realise that the Canadian people no longer want reciprocity. It is doubtful whether a reciprocity treaty in natural products would be advantageous to Canadian farmers, even if Canadian manufacturers were not sacrificed. We now import annually from the United States about 16,000,000 dols. worth of farm products of the same kind as Canadian farmers produce. If United States natural products were admitted into Canada free of duty, these importations would be enormously increased. Then, as Premier Ross points out, there would be no permanency in any arrangement with the United States. It might be terminated by the caprice of politicians. Reciprocity would destroy the stability of Canadian industry and commerce, and give our farmers an uncertain foreign market of doubtful value in exchange for a certain home market.

"The time has come for Canadians in general to let the Government know their feelings in this matter."

The Hon. G. W. Ross, Premier of Ontario, speaking in September, 1903, said :—

"I cannot understand why some Canadians are so anxious for reciprocity with the United States. I am not an enemy to commercial relations with the United States or any other country, but I do feel that there is a danger in us entering into a reciprocity treaty with the United States unless it is so carefully considered as not to place us at the slightest disadvantage, and that is a most difficult problem. In any case there are difficulties, I believe. A very distinguished man said that if the reciprocity treaty of 1854 had not been repealed until twenty years later, Canada would have been practically absorbed in the United States. I am not afraid of political absorption ; I don't think that is possible now. It might have been possible at one time. I know it will not take place during the present generation, at least. The artificial market which would be created by reciprocity would be in no case as good to us as the natural market we now have in Great Britain. . . . I prefer looking to a market that is natural, that is almost inexhaustible in its demand upon whatever we have to sell ; a market where a friend stands and takes toll, not an opponent ; a market where no natural or artificial condition that we can see is likely to be impaired at the caprice of either of the parties of that market. Besides, we have spent a great many millions now in directing our lines of transportation towards Great Britain."

The views entertained in Canada in some influential quarters, a few years ago, are voiced in the following extract from one of the most powerful of Canadian journals* :—

"The settler . . . knows he could get a better price for his hard wheat from the American millers if the United States duty were repealed than he obtains from the Montreal buyers ; that he could also do better with his flax, barley, and potatoes ; whilst a vast market would be opened to the coal, salt, fish, iron, petroleum, and other pro-

* *Toronto Globe*, August 7th, 1888.

ducts with which the region abounds. Coming to imports, the settler could buy to better advantage at St. Paul or Chicago than he can at Montreal ; that is to say, free trade with his neighbours would tend not only to augment the value of everything he has to sell, but to diminish the cost of everything he has to purchase, thus benefiting him in both pockets. The local newspapers are fully alive to the importance of the subject, and almost every issue of those journals which are not hampered by the exigencies of organship contains letters from settlers in which the question is discussed with true Western vigour."

There is a certain amount of reciprocity provided for in the tariff of the Dominion, including that of locomotive and railway passenger, baggage and freight cars, the property of railway companies in the United States running upon any line of road crossing the frontier, so long as Canadian locomotives and cars are admitted free under similar circumstances into the United States, under regulations to be prescribed by the Minister of Customs.

CHAPTER VI.

Imperial Consolidation.

Very many proposals have been put forward at different times looking to the consolidation of the Empire. These proposals, more or less, naturally fall into one or other of the two categories of commercial and political union. The former has generally been understood to involve, if not a Zollverein system, at any rate arrangements for preferences in tariff matters that would be calculated to promote the business interests of the two countries. The Montreal Congress of 1903 looked only to an arrangement of this kind, although there was much talk of a sentimental kind, and the most unfeigned professions of loyalty to the British Crown, which, indeed, were translated into action again and again.

The problem that the Canadians have to solve, with a view to this consolidation, is, in its way, quite as difficult as that which is now before the Mother Country. They have not only started, but have already proceeded a considerable distance on, a career of varied and extensive manufacturing industry. Probably very few people in the Mother Country are aware of the achievements already placed to their credit in this field. They have some of the largest manufacturing plants in the world applied to agricultural implements, to the paper industry, to the cotton and woollen industries, to the smelting of copper, and to many others. A vast capital is already embarked in Canadian manufactures. This expenditure is being increased year by year on a constantly growing scale. Toronto and Montreal, relatively to their population, are among the most important industrial cities on the American Continent. Almost every small town and village in the Dominion seeks to attract capital to manufactures. Bonuses and free grants of land are offered to capitalists who will found factories to attract population and develop general prosperity. The ambition of the Canadians is to rival the United States. They are fully aware of the manner in which, and the extent to which, the American people have built up their vast industry, and they do not see why they should not do the same. Consolidation of the Empire is a bird in the bush ; business prosperity is a bird in the hand. The former is more or less a pious and academic aspiration. The latter is regarded as a stern and unrelenting necessity.

On the other hand, it is probable that the Mother Country will look for some more substantial preferences from the Colonies than the foregoing consideration would appear to justify from the Canadian point of view. If it should appear that a preference of any agreed percentage is not of much use to home trade in Canadian markets, and

that, despite of that percentage preference, the trade of the Dominion continues to increase with the United States and to decrease or remain stationary with the United Kingdom, the preference desired by Canada in the home market is not likely to be accorded, and to that extent, therefore, the hopes of an Imperial consolidation are not improved.

Here, indeed, an *impasse* is reached, which must be overcome as a condition precedent to further progress.

A political union exists already. It is unlikely that Canada will encourage the idea of a closer political union, on political grounds alone. Many Canadians whom I have met are of opinion that the maintenance of the existing somewhat loose conditions may rather lead to a more or less relaxed political connection, and to the ultimate assertion by Canada of claims and rights which can only make for a severance. The commercial tie, however, if it can be suited to the obvious interests of both sides, is likely to provide the *raison d'être*, not only for the stoppage of centrifugal tendencies, but for the establishment of an intercourse which, always regarded as pleasant, would then be welcomed as profitable also.

Hence, in both the Motherland and the Colonies, the question of the hour is, and the question of many years past has been, that of discovering some method of bringing the Empire into more permanent and, if possible, indissoluble bonds of union, without detriment to the interests of either. This problem is one to which most of us who take an interest in public and Imperial affairs have given more or less attention in previous years ; and I may, in this connection, be excused if I recall a proposal for which I am responsible—published in a pamphlet which I issued as far back as 1894—and in which I made the following recommendations as the basis of an Imperial Customs Union, suited to the requirements of all the constituent parts of the Empire :—

Proposals for an Imperial Customs Union.

1. That the Colonies should be represented, either in the Imperial Parliament, or in a Federal Council of the Nation, to be created, for the purpose of carrying out the objects of Imperial Federation, on the basis of trade, as ascertained by the volume of imports and exports.

2. That such Council should be specially charged with the duty of examining the economic conditions and requirements of each possession of the British Crown with a view to the ascertainment of the special resources, the fiscal necessities, and the industrial possibilities of each.

3. That the Council should be authorised and empowered to make such provision as appeared to it to be requisite and expedient for calling needful Customs tariffs into existence for the purpose of raising both local and Imperial revenues.

4. That the fundamental principle of all such tariffs should be that of first levying duties on luxuries, as in the economic system of the Mother Country.

5. That, where tariff duties on luxuries fail to provide the needful

proportion of revenue, the rest of the affiliated possessions, with the Mother Country, should make up the difference.

6. That each of the Colonies should be allowed a bounty, to be contributed by the rest of the Empire, on such industries as were declared by the Federal Council to be specially suited to Colonial resources and needs, to be limited to a specified and inconsiderable period, in lieu of protective duties, if such bounty were deemed to be necessary.

7. That if attempts were made to establish manufacturing industry where the conditions were deemed by the Federal Council to be unsuited for their development no such aid should be afforded.

8. That all raw materials of industry should be exempted from tariff duties throughout the Empire.

9. That the tariff duties now levied by the Colonies on commodities which are the produce of the Mother Country shall be gradually reduced in accordance with a differential scale, graduated according to the amount of the duty, until at the end of not more than twenty years they are entirely got rid of, looking to the ultimate adoption of a tariff for revenue only.

10. That if any of the Colonies are in a position to show that this action will seriously prejudice their interests they shall send in a claim to the Federal Council, which shall be considered with a view to modifying the last-named provision, or making compensation for such prejudice.

11. That, in acknowledgment of the concessions so made by the Colonies, the Imperial Parliament, or the Federal Council, or both, shall accept the responsibility of guaranteeing the payment of interest on investments made in Colonial railways, subject to certain safeguards, and shall assist the Colonies in carrying out such other public works as may be necessary or expedient—the railway extension so guaranteed to be, say not more than 15,000 miles a year in the Empire as a whole—until a certain pre-arranged relation of mileage to area and population has been attained.

12. That the agricultural interests of the Colonies shall be guaranteed, through the Federal Council, the free transport of produce to the sea, when destined for export to the Mother Country, in competition with similar products from other countries, with a view to enabling them to better compete with foreign producers.

13. That if these arrangements should be insufficient to enable the Colonies to export food supplies in successful competition with other countries, the Imperial Parliament, or the Federal Council, shall guarantee the subsidy of vessels carrying Colonial produce to the Mother Country to such an extent as will rebate the difference of freight resulting from their greater distance from the home market.

14. That where it is proved that the exports of the Mother Country in Colonial markets, or the exports of the Colonies in the home markets, are at any disadvantage as compared with those of foreign countries, such disadvantages shall be enquired into, and, as far as possible, redressed by the Federal Council, within limits to be defined.

15. That for this purpose experts may be appointed whose business it shall be to reside in each of the principal centres of commerce and

industry, and report at frequent intervals on the extent to which foreign countries are making progress in the markets of the Mother Country and the Colonies, and the causes and conditions of such advances.

16. That a system of commercial museums shall also be maintained throughout the Empire at the cost of the Federal Council, with a view to showing the costs, the characteristics, and the qualities of the products of each section thereof.

17. That special exchanges should be erected and maintained for reciprocal dealings in British and Colonial produce only.

18. That there should be a consolidation of the debts of the Empire, with a view to the reduction of the interest payable by the Colonies on their loans. (A federated British Empire may always be expected to effect such a consolidation at a lower rate than individual Colonies.)

19. That the currency of the Empire shall be uniformly established on a gold basis, and that the Federal Council shall undertake to see that arrangements are made to this effect, to the extent of assisting such possessions as now maintain a silver currency, where needed.

Some of the recommendations here set out may appear to have suffered in suitability by the lapse of time, although the interval has not been a long one, but such as they are, they may not be without interest even now. While they were not intended to specially apply to the case of Canada, they seem to me to do so to-day in a remarkable degree.

The basis of this scheme of Imperial consolidation is clearly that of offering advantages to all Colonies alike. If this can be secured, then the present danger of one Colony being dissatisfied with the treatment meted out, either to itself or to another, would be largely remedied. When Russia penalised the overland tea trade by way of reprisal for the action taken by the British Government in respect of bounty-fed sugar, it was not foreseen that her reprisals would have a mischievous influence on some of our tea-growing possessions; but this thing happened, and these Colonies both had cause of complaint, and did complain. It is, perhaps, humanly impossible to mete out exactly the same measure of advantage to every Colony under any scheme of consolidation, but the scheme which accords to all the most perfect equality of treatment is the one most likely to be permanently successful.

CHAPTER VII.

The Canadian Bounty System.

One of the most important instruments applied by the Canadian people to the development of their industrial system, and of the iron industry in particular, is that of bounties on the output and on the export of manufactured products. This is a system which causes a certain amount of resentment in outside countries, and not least so in Great Britain, while it seems to have only a half-hearted support in the Dominion itself. At any rate, the Canadian Manufacturers' Association, at its meeting in Toronto, in September last, declared that "while the Government have recognised the pressing needs of certain industries by the granting of bounties, your Committee desires to express its disapproval of the bounty system except in very special cases; we are of the opinion that a bounty system, as applied in Canada, can only be a temporary stimulant, and unless it leads up to permanent protection, tends to instability, and is liable to be followed by reactions which may eventually retard the development and progress of manufacturing industries."

In the face of this declaration from the most powerful organisation representing the interests whom bounties were designed to protect, it can hardly be supposed that the bounty system will continue much longer to cumber the Dominion statute-book. Meanwhile, it is interesting to trace the origin, incidence, and influence of the movement, as applied to iron and steel.

The iron and steel bounty system in Canada dates back to 1883. It was established as part of the national policy of the Conservative Party. The late Sir John Macdonald had not long introduced the first of his higher protective tariffs when the then iron manufacturers of Canada began a movement for bounties. There were then only three small blast furnaces in the Dominion. One was at Londonderry, Nova Scotia; the second at Woodstock, New Brunswick; and the third at Radnor, near Three Rivers, in the Province of Quebec. Canada was then importing most of its iron supplies from Great Britain. The Bounty Act provided for the payment of a bounty of 1 dol. 50 cents a ton on pig-iron made in Canada from Canadian ores. The import duty on pig-iron was then 2 dols. a ton. Four years later, at the instance of the iron manufacturers, the duty was advanced to 4 dols. a ton. From 1890 to 1893 the bounty was at the rate of 1 dol. a ton. In 1894 the bounty on pig-iron was advanced to 2 dols. a ton, and bounties of 2 dols. were established on puddled bars and steel ingots.

In 1896 the Conservatives, who had inaugurated the protective tariff and the bounty system, and who had been continuously in

power since 1878, were defeated at the General Election, and in 1897 the Budget was introduced by the Hon. Mr. Fielding, the present Minister of Finance. This was the Budget which established the preferential tariff for Great Britain. By that tariff the duties on iron and steel from Great Britain were reduced. But to equalise conditions for Canadian iron and steel manufacturers, the bounties, which since the revision of 1894 had stood at 2 dols., were advanced to 3 dols. a ton. Hitherto, these bounties had been payable only on iron and steel produced from Canadian ores. Under the Fielding legislation a wider application was given to the bounty system, and it was provided that on pig-iron made in Canada from other than Canadian ore there should be a bounty of 2 dols. a ton, and that on steel ingots made from pig-iron, not less than 50 per cent. of which had been made in Canada, there should be a bounty of 3 dols. a ton.

Mr. Fielding introduced the bounty legislation of 1897 in a speech which was marked by no enthusiasm for the bounty system. It was, in fact, apologetic in tone. The best he could say on behalf of the legislation he was proposing was that, under existing conditions, it was only reasonable that the iron and steel manufacturers should be given a chance for a few years longer to enable them to show what they could do.

The Fielding Act of 1897, as originally introduced, provided that the bounties should end in 1902, and be paid only on iron and steel used in Canada. In the event of shipment outside Canada, the Governor-General in Council was to be empowered by Order to impose an export duty equivalent in amount to the sums which had been paid in bounties on these shipments. This provision was objected to by Mr. Foster. In the interest of Canadian labour and Canadian industrial development, he urged that the bounty should be paid alike on pig-iron and steel ingots used in the Dominion or shipped abroad. Mr. Fielding answered that if there were no export duties, Canada, by its bounty system, would attack the industries of the country to which its iron and steel were exported, and that Canada in this matter would do what Germany had long done to Canada in the sugar trade. When the House went into Committee on the Bill, Mr. Fielding announced that the Government had abandoned the idea of imposing an export duty, and as a result of this concession of 1897, and of the legislation passed in 1899, pig-iron and steel shipped from Nova Scotia to Great Britain and elsewhere outside Canada will continue to receive bounties until 1907.

It was originally intended that the bounties on iron and steel should have ended in the year 1902. When the Fielding Bill of 1897 was before Parliament, notice was given to the Canadian manufacturers that the bounty system was to come to an end. The Whitney syndicate, however, on obtaining its charter from the Legislature of Nova Scotia in 1900, made overtures to the Laurier Government for a further extension of the bounty system. This syndicate had launched its project that has now issued in the Dominion Iron and Steel Works, after the intimation of 1897, that the bounties were to end in 1902. When the Whitney syndicate presented its case to the Laurier Government in 1899, it was decided that the bounty system should be extended on behalf of the Sydney enterprise until 1907 on a decreasing scale.

In July, 1903, the Finance Minister introduced into the Dominion House of Commons new resolutions proposing bounties on iron and steel produced in Canada, of which not less than 50 per cent. consists of Canadian pig-iron.

On rolled, round wire rods, not over three eighths of an inch in diameter, when sold to wire manufacturers for use in making wire in their own factories in Canada, a bounty of 6 dols. per ton.

On rolled angles, tees, channels, beams, joists, girders, or bridge building or structural rolled sections, and on other rolled shapes not round, oval, square, or flat, weighing not less than 35 lbs. per lineal yard, and also on flat eye bar blanks, when sold for consumption in Canada, a bounty of 3 dols. per ton.

On rolled plates not less than 30 in. in width and not less than a quarter of an inch in thickness, when sold for consumption in Canada for manufacturing purposes for which such plates are usually required, and not to include plates to be sheared into plates of less width, a bounty of 3 dols. per ton.

The same Act provided that the 1897 bounties should be continued until June 30th, 1907, on a decreasing scale.

Wire rods, now aided by a bounty of 6 dols. a ton, were previously on the free list. Angles, tees, joists, and structural rolled sections exceeding 35 lbs. to the yard, and rolled plates not less than 30 in. wide, are subject to a duty of 10 per cent. With the bounty of 3 dols. a ton their total protection at present prices is about 6 dols. 80 cents a ton.

It may be added here that the imports of wire rods into Canada in the fiscal year ending June 30th, 1902, were 1,103,641 cwt., of which 883,878 cwt. came from the United States. Of plates, the imports were about 195,000 tons. About 28,000 tons of structural steel came in.

When the Fielding Bounty Bill was introduced, it was announced in Canada that manufacturers of iron and steel were not entirely satisfied with the plan of assisting their industry by extending the bounty system to articles made from billets. "Bounties cannot be piled on bounties without provoking public disapproval. For, no matter how successful the expedient is, no matter how much domestic competition it may breed, the public treasury will have to pay out the same amounts per ton on the increased output. There is no disguising this taxation. Its incidence is on the consuming public, who contribute to the revenue chiefly by way of Customs duties on other things. From the proceeds of the dutiable list of the tariff must come the money to subsidise the steel industry. It is generally held that instead of levying Customs duties on other articles, and paying part of the proceeds to the iron and steel makers, it would be better to put sufficiently high duties directly on imports of iron and steel, and let their own duties be their own protection. Protected in that way, the question of who pays the duty would be one as to which there would be some uncertainty in the public mind. But the bounties come manifestly out of the pockets of the people."*

In the fiscal year ending on June 30th, 1903, the total bounties

* *The Iron Age*, July 16th, 1903.

paid by the Dominion of Canada to iron and steel makers amounted to 1,245,382 dols. It was apportioned as follows:—

	Dollars.
For pig-iron:	
Dominion Iron and Steel Company	386,338
Hamilton Steel and Iron Company	90,915
Nova Scotia Steel and Coal Company	88,974
Canada Iron Furnace Company	37,472
John McDougall & Company...	4,598
Deseronto Iron Company	12,409
Total	620,706
For steel ingots:	
Dominion Iron and Steel Company	499,625
Hamilton Steel and Iron Company	36,792
Nova Scotia Steel and Coal Company	79,852
Total	616,269
For puddled iron bars:	
Hamilton Steel and Coal Company	8,407

The Act of 1897 provided for the payment of 3 dols. per ton "on steel ingots manufactured from ingredients of which not less than 50 per cent. of the weight thereof consists of pig-iron made in Canada"; 3 dols. per ton "on puddled iron bars manufactured from pig-iron made in Canada"; 3 dols. per ton "on pig-iron on the proportion produced from Canadian ore"; and 2 dols. per ton "on pig-iron on the proportion produced from foreign ore." These bounties have been extended to June 30th, 1907, provided, however, that they shall be annually reduced after April 23rd, 1902, as follows:—From that date to June 30th, 1903, 90 per cent. shall be paid; from July 1st, 1903, to June 30th, 1904, 75 per cent.; from July 1st, 1904, to June 30th, 1905, 55 per cent.; from July 1st, 1905, to June 30th, 1906, 35 per cent.; from July 1st, 1906, to June 30th, 1907, 20 per cent.

Down to June 30th, 1901, there had been paid in iron and steel bounties under the foregoing Acts a total of 2,168,435 dols. In addition to these payments the Province of Ontario has paid since 1894 a bounty of 1 dol. a ton on all pig-iron made in the province from iron ore mined in Ontario. Down to October 31st, 1901, there had been paid under this legislation 59,741 dols.

Following is a statement of the amounts which have been paid under the Federal Parliamentary authorisation:—

Fiscal year.	Amount.	Bounty paid per ton.	Fiscal year.	Amount.	Bounty paid per ton.
	Dollars.	Dollars.		Dollars.	Dollars.
1884 ...	44,090	1.50	1893 ...	93,896	2.00
1885 ...	38,655	1.50	1894 ...	125,044	2.00
1886 ...	39,270	1.50	1895 ...	63,384	2.00
1887 ...	59,576	1.50	1896 ...	104,105	2.00
1888 ...	33,314	1.50	1897 ...	66,509	2.00
1889 ...	37,234	1.50	1898 ...	165,654	*
1890 ...	25,697	1.00	1899 ...	187,954	*
1891 ...	20,153	1 00	1900 ...	238,296	*
1892 ...	30,294	1.00	1901 ...	3[illegible]1,259	*

* Three dols. per ton on pig-iron made from Canadian ore and 2 dols. per ton on pig-iron made from foreign ore.

The next table is a statement of the quantities of, and the amount of bounty paid on, steel ingots, steel billets, and puddled bars produced in 1896-1901 :—

Year ended June 30th.	Steel Ingots.		Steel Billets.		Puddled Bars.	
	Quantity.	Bounty paid.	Quantity.	Bounty paid.	Quantity.	Bounty paid.
	Tons.	Dollars.	Tons.	Dollars.	Tons.	Dollars.
1896 ...	—	—	29,749	59,498	2,806	5,611
1897 ...	—	—	8,683	17,366	1,509	3,019
1898 ...	18,137	54,412	*4,912	*13,042	2,615	7,706
1899 ...	24,881	74,644	†	†	5,837	17,511
1900 ...	21,453	64,360	†	†	3,374	10,121
1901 ...	33,352	100,058	†	†	5,568	16,703

* Manufactured in 1896-7 and paid for in 1897-8.
† No bounty paid on steel billets after June 30th, 1897.

Following the example of Canada, the Parliament of Newfoundland recently had before it a Bill to provide for bounties on iron and steel manufactured in that colony. The Act provides that the Governor in Council may authorise the payment of the following bounties on pig-iron, puddled iron bars, and steel billets made in Newfoundland :—

(1) A bounty of 1 dol. 50 cents per ton on pig-iron made in Newfoundland from ore, fuel and flux, the products of Newfoundland. (2) A bounty of 1 dol. per ton on pig-iron made in Newfoundland from ore and flux, the products of Newfoundland. (3) A bounty of 1 dol. per ton on puddled iron bars manufactured from pig-iron made in Newfoundland from Newfoundland ore. (4) A bounty of 1 dol. per ton on steel billets manufactured in Newfoundland from pig-iron (made in Newfoundland from Newfoundland ore), and such other ingredients as are necessary and usual in the manufacture of steel billets, the proportion of such ingredients to be regulated by order of the Governor in Council. Provided that in computing the bounty no payment shall be made with respect to foreign ores or metal produced therefrom used in the products herein mentioned. The bounties will be applicable until June 30th, 1910, and shall be payable and gradually reduced, as follows :—(*a*) From July 1st, 1905, to December 30th, 1906, both inclusive, the bounties shall be 95 per cent. of the amount fixed by Section 1 ; (*b*) from July 1st, 1906, to June 30th, 1907, both inclusive, the bounties shall be 75 per cent. of the amount fixed by Section 1 ; (*c*) from July 1st, 1907, to June 30th, 1908, both inclusive, the bounties shall be 55 per cent. of the amount fixed by Section 1 ; (*d*) from July 1st, 1908, to June 30th, 1909, both inclusive, the bounties shall be 35 per cent. of the amount fixed by Section 1 ; (*e*) from July 1st, 1909, to June 30th, 1910, both inclusive, the bounties shall be 20 per cent. of the amount fixed by Section 1.

The Canadian bounty system hits the iron trade of the Mother Country harder than it does any other interest that I know of. The United States would appear, on the first blush, to be equally affected by it, but that is in appearance only. The Mother Country

is not, like the United States, able to dump its produce on Canadian markets without adequate profits; unless the trade yields a profit it will not be done. This distinction is, of course, due to the fact that the United States are protected in their home markets, both by their general tariff system, and also, more or less, by their organisation on lines that enable prices to be artificially maintained. But that is not all. The United States boundaries march with those of the Dominion for over three thousand miles, and throughout this territory, Great Britain has clearly but a small chance of successful competition against American producers, while in the maritime provinces, where she has a better chance, the bounties have stimulated the artificial development of indigenous industries that are now taking possession of the markets.

CHAPTER VIII.

The Relations of the Dominion and the Republic.

Those of us who have had the opportunity of mixing freely with the people of Canada, and of understanding their attitude and wishes in regard to their future relations with the Mother Country, must have been more particularly struck with two things: the first, their great devotion and loyalty to the Mother Country and to the Crown; and the next, their unqualified determination to have as little as possible to do with the United States. Two further characteristics must have come under observation. One of these is the desire of the Canadians to send as much of their trade Britain-wards as they possibly can, without increasing loss or inconvenience in their every-day business life; and the other is the fact that, despite this unquestionable wish to make it easy for the Mother Country to secure a large part of their foreign trade, the great bulk of that trade is done by the United States. This latter circumstance is not because the Canadians prefer to have it so, but because of environment and conditions which it seems difficult to alter and almost impossible to control.

It is desirable, before proceeding farther, to look somewhat into the question of this environment, because, to a large extent, it is fundamental in its influence, not only on the relations of the Dominion and the Republic, but also on the conditions now existing, and likely in the future to prevail, between the Dominion and the Mother Country.

Some Features of Daily Intercourse.

The personal intercourse between the United States and the Dominion, both social and commercial, is very much greater than that which connects, by ties of friendship or of mercantile interest, the Dominion and the Mother Country. It is probably no exaggeration to assume that for one visit paid to the Dominion by an Englishman, a hundred visits are paid by an American. The Englishman can only reach Canada after an ocean voyage of at least a week's duration, and costing, for the return ticket, £18 to £50. The American resident in New York, or the Canadian resident in Montreal, can board the trains of the Delaware and Hudson or the New York Central Railroads at eight or nine o'clock at night, and reach the other city by breakfast time next morning, at an expenditure, for the return journey, of not more than twenty dollars. And matters are so arranged that this exchange of visits is made easy and comfortable in relation to Customs' barriers. Baggage can be, and usually is, examined by the Customs' officers of the one country, stationed at the terminal depôts of the

other, before the trains start, so that there is no stoppage at the frontiers for that purpose, as there usually is at the frontiers of the countries of Continental Europe. In short, one needs to be reminded of the fact, in order to realise that the journey begins in one country and ends in another.

The whole atmosphere of existence in Canada is suffused with ideas, habits, methods, instincts, and traditions borrowed from the other side of the line, as could hardly fail to be the case when two people of the same race, speaking the same language, and having to a large extent a common history, a common literature, a common judicial system, and a common point of view, have frontiers that march together for nearly 3,000 miles without any artificial boundaries to mark the accident of a different Government. What is there in the United States, outside the political sphere, that is not duplicated in the Dominion? Conversely, what is there in the Dominion, apart from its British connection and political point of view, that is not to be found reproduced more or less completely in the United States? The two countries even divide between them the more prominent natural features of the North American continent, such, for example, as the Rocky Mountains, and its great river systems; Lake Superior and other of the great freshwater lakes, which is probably the most distinguishing feature of all; the greatest natural wonder on the face of the whole continent, the Falls of Niagara, is shared almost equally between them; their territories are coterminous both on the Atlantic and on the Pacific; they share between them the great fisheries of both oceans; and tacitly they divide the wonderful salmon fisheries of the Columbia and the Fraser Rivers, as well as minor sources of fish supply.

When the ordinary established habits and customs of the people are examined, the same identity becomes apparent. The streets of a Canadian city are to all intents and purposes replicas of the streets of an American city. The systems of transport are the same. The American method of charging for street transport—a five cent fare, regardless of distance—is general in Canada. The currency is exactly the same in Canada as in the United States, and is not modelled, as one would expect from its political connections, on that of England. Canadian railway methods are almost identical with those on the other side of the line—the same systems of classification, of handling baggage, of issuing tickets, of constructing and arranging stations, of purveying refreshments, of securing sleeping accommodation, and a hundred minor details which constantly serve to remind the European traveller that he is conforming in the Dominion to American, and not to European, systems of travel.

It is much the same in matters of home and hotel life. Most of the Canadian hotels adopt what is known as the "American plan" of paying a fixed rate per day for board and bedroom, in contradistinction to the European plan of paying only for what is consumed, and having each meal charged separately, although in a number of cases either of the two plans is optional. The ordinary arrangement of the hall and public rooms of a Canadian hotel is much the same as that usually adopted in an American hotel—that is to say, the central hall is a place of public resort, in which people lounge to their

hearts' content, and it is frequently also the location of a number of shops, notably those of the tobacconist, the chemist, the newsagent, and the hairdresser. The systems of allotting rooms, of dealing with luggage, of making out accounts, of handling the *menu*, and of running the hotel generally, down to the minutest detail, are very generally identical in the two countries, so that it requires an effort to remember that they are not separate communities.

In the architecture and arrangement of the private houses the resemblances are not always quite so close. Not that it can be said that each country has a style of its own, but that environment has, in the majority of cases, much to do with the architectural and constructional features of a place of residence. Most American and Canadian towns are, however, alike in this—that they have still a large proportion of timber-built structures that are mostly designed after the same pattern. Such houses are often to be found of large size and considerable architectural pretensions, and it is difficult, in going round the outskirts of Montreal and Vancouver, to believe that one has not strayed accidentally into the suburbs of Chicago or Detroit. The higher-grade private houses, built of stone or granite, have usually an individuality of their own, which, however, is not inconsistent with the coincident existence of a strong family likeness, that it would be difficult to reproduce in any part of Europe, and which is certainly far from lending itself to sympathy with English ideals. One common characteristic of the private homes of the two countries can hardly fail to strike the European traveller. In many of the best suburbs, and with many of the finest houses, no fence is provided to enclose the surrounding grounds, but the lawns and flower-beds which border the common roadway are left free from any protection against trespass, and it does not appear as if this confidence in the friendly behaviour of men and mice were much abused. Such a system would probably not live for a month in most English towns, but then the exclusiveness and isolation of the average British dwelling of high degree have perhaps brought their own Nemesis in a greater liability to trespass and violation. Moreover, the class of men and women who would be likely to disturb the privacy of such dwellings is perhaps relatively much smaller on the American continent.

As with the external appearance of the typical American home, so with its internal arrangements. There is usually a strong family likeness in the domestic details. As an example, the Canadians have, almost without exception, discarded the old English system of the open-fire, and applied the American system of the enclosed stove, where they do not adopt the more recent and now widely-applied system of the steam radiator. In both cases the central hall is generally the largest and the most commonly used apartment in the house. The constitution and the administration of the *ménage* is to a large extent the same, with this important difference, that in the United States negro servants are largely employed, while on the Pacific Coast, Canada and the States alike show a decided partiality for Chinese domestic labour. I found that in Victoria and Vancouver the bulk of the domestic helps were Chinese, and in some cases, as at the Vancouver Hotel, Japs were employed. The dishes that are

peculiar to the United States are also well-known and frequently adopted in Canada—such, for example, as hominy and clam chowder.

Business Relations.

The business and commercial conditions of Canada are necessarily more or less peculiarly its own. This is inevitable in a country which still imports so large a part of its every-day commodities, as Canada continues to do. But this very fact, so far from leading Canadian systems to be a law unto themselves, tends to assimilate them more closely to those of the United States. Montreal, for example, is almost as much dependent as either Boston or New York upon the anthracite coal-fields of Pennsylvania for its domestic fuel supplies. The hardware needs of the Dominion are generally supplied, not by Sheffield, Birmingham, and Wolverhampton, but by the New England States, and the foundries of Cleveland (Ohio), Minneapolis, and Chicago.

The considerations just stated go far to explain the increase of trade between the United States and Canada in the last ten years, in spite of tariff barriers and the preference given for the last five years by the British Colony to the Mother Country. Since 1893 the total foreign trade of the United States has increased by about 50 per cent., but that part of it which is with Canada has more than doubled. The increase in the total imports of the United States has been about 30 per cent.; in their imports from Canada it has been 60 per cent.; while the increase of the whole volume of exports has been 66 per cent., and of the exports to Canada 125 per cent. In 1903, the United States took about 55,000,000 dollars' worth of imports from the Dominion, against 34,000,000 dollars in 1893, and sent 130,000,000 dollars of exports there against 57,000,000 dollars ten years previously. The total trade will have increased from 91,000,000 dollars to 185,000,000 dollars. The relation of exports to imports has not changed very materially, though the tendency has been towards an increase in the proportion of exports on the side of the United States.

The main cause of the general increase of trade between the two countries is the industrial and commercial development that has been going on, especially on the Canadian side. Canada has had much more to dispose of to foreign countries than she had ten years ago, and the United States have taken proportionately more of it in spite of tariff barriers. To at least a corresponding extent she has had increased ability to buy from foreign countries, and in spite of her own tariff barrier she has taken a larger proportion from her neighbours because that barrier did not fully offset the lower cost of transportation.

Commerce between the United States and Canada was larger in the fiscal year 1902–3 than in any preceding year. This is true both as to imports and exports. The figures of the year's commerce show that the imports from Canada amounted to 54,660,410 dollars, and the exports to Canada to 123,472,416 dollars. In this term is included British Columbia, Quebec, Ontario, Nova Scotia, and New Brunswick. Of the imports of the year 38 million dollars, speaking in round terms, were from Quebec and Ontario, 10 millions from New Brunswick and

Nova Scotia, and 6 millions from British Columbia. Of the exports 110 million dollars were to Quebec and Ontario, 7 millions to New Brunswick and Nova Scotia, and 6 millions to British Columbia.

The figures of growth in the exports from the United States to Canada are especially interesting in view of the fact that the Canadian tariff has given to the products and manufactures of the United Kingdom and most of her Colonies a reduction of 12½ per cent. in the tariff rates from April, 1897, 25 per cent. from August, 1898, to July 1st, 1900, and since that date a reduction of 33⅓ per cent. Yet it was during that period that the most rapid growth in the exports from the United States to Canada occurred. In the fiscal year ending June 30th, 1897, the exports from the United States to Canada were 65 million dollars, and they had increased to 123 million dollars in 1903. This is an increase of 90 per cent., while the increase in the total exports meanwhile to all countries had been about 40 per cent.

The Hon. G. W. Ross, Premier of Ontario, in addessing the Canadian Manufacturers' Association in September, 1903, said: "I do not quite understand why we buy such large quantities of goods from the United States, while they buy so little from us. There is something anomalous about that. Can't we make as good goods as Americans? Are we wanting in skill? Then why do we buy so much from them? And what are the physical or commercial conditions which prevent us selling to the Americans proportionately as we sell to Great Britain? We bought from them last year, say, 120,000,000 dollars' worth of goods; a good deal of it was raw material; a good deal of it was raw cotton; a good deal of it was coal, and so on; and yet they bought from us only 66,000,000 dollars' worth of goods. There is a disproportion in that which I believe ought to be corrected. Now, that is not the fault of our produce, as far as I can understand it, for I think that the produce of our factories is equal in quality to the best qualities of the United States. I think that can be safely said. We bought from them last year 17,000,000 dollars' worth of iron goods and the manufactures of iron. Is there not a large field here for such an industry in the Province of Ontario? We bought from them 2,000,000 dollars' worth of paper and manufactures. Is there not a large field here for our pulp industries, and for the manufacture of paper in Ontario and in Quebec, or any other part of this Dominion? And so on. Now, that is the condition of things, which we had better correct as quickly as we can. In the other case our money is being drained to build up industries that are being strengthened to be competitors with ourselves, and the sooner that is corrected the better for the Province of Ontario and for the Dominion of Canada."

This tone was often held in the course of my journeys through the Dominion. It hardly need excite surprise, and yet it is only the natural result of the conditions and environment of the two countries. Meanwhile the British trader is entitled to ask where does he come in? In Britain's trade with the Dominion, the British imports are more than twice the value of the British exports. The difference here is 116 millions of dollars in favour of Canada. Does Mr. Ross propose to redress this balance also; if so, how?

CHAPTER IX.

Canada and the United States—a Parallel and a Contrast.

Some Comparisons with the United States.

There is no more sound and reliable method of computing what is likely to be the future of a country like Canada than that of estimating the influences and conditions which have affected a nation that has been, and continues to be, more or less under parallel conditions. The United States and Canada have nearly the same extent of cultivable territory. They are more or less identical in climatic conditions over a wide range of their vast areas, always allowing for the greater extent of the Canadian territory within the arctic circle. They are both influenced to a large extent by immigration, and Canada is likely, before another generation has run its course, to have as mixed and heterogeneous a population as its nearest neighbour. Both countries possess immensely valuable water-powers, great natural waterways, enormous coal areas, wonderful mineral resources, untold wealth in timber and other products of the soil, valuable fisheries, and kindred characteristics. Taking the conditions as a whole, it is not unreasonable to assume that what has already happened in the case of the United States is likely to be reproduced—to a very large extent, at any rate—in the experience of Canada, and on that assumption, we may proceed to consider what the United States have actually succeeded in achieving during the last hundred years, so far as the particulars are available.

Population.

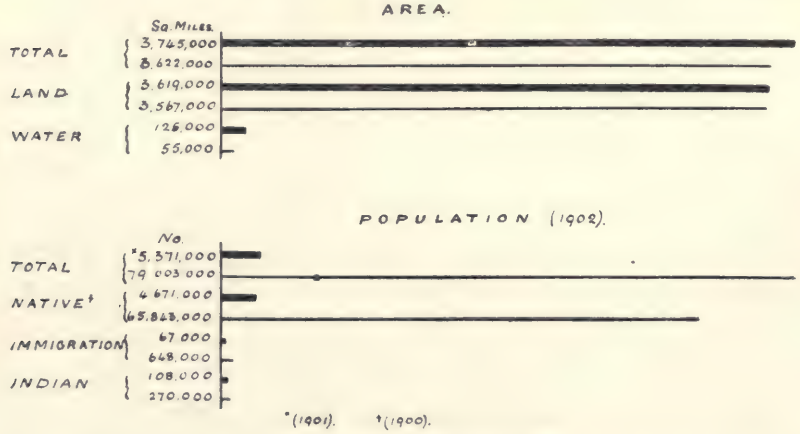
And, first, as to population. In the year 1801, the United States had a materially smaller number of inhabitants than Canada has to-day. In 1830, the total population was rather under 13 millions, an increase of 7½ millions in thirty years. In the next thirty years there was a further increase of 19½ millions, bringing the total inhabitants up to about 31½ millions. From the Census year 1850 to the Census year 1900, the growth of population is shown in the following table, which affords an indication of the rate of growth during each decade, and shows that between 1860 and 1900 there was a total increase of 45 millions, or an average of about eleven millions every ten years.

Growth of Population of United States in Census Years 1850 *to* 1900.

Census year.	Population 1=1,000	Population per sq. mile.
1850	23,192	7·78
1860	31,443	10·39
1870	38,558	12·74
1880	50,155	16·57
1890	62,622	20·70
1900	76,303	25·22

Before we can assume what the advance is likely to be, or if it can be reproduced at all, in the case of Canada, we have first to examine the chief conditions that have supplied the special stimulus under which it has been brought about. Probably the chief contributory causes have been three in number—(1) Large and varied agricultural resources; (2) exceptional mining and manufacturing resources; and (3) the development of railways and merchant shipping.

No one who has had the opportunity of examining the material circumstances of the Dominion can doubt as to its possession of the two former conditions. As to the third, it will no doubt come in due time. It is not very important to inquire whether Canada has more or less land available for cultivation, whether it has more or fewer minerals, more or fewer mines, more or fewer manufacturing establishments. The chief basis of industrial prosperity is coal. Canada has about 100,000 square miles of ascertained coal resources, against nearly double that area ascertained for the United States, but a very large part—perhaps the greater part—of Canada has not been fully explored,* and there is a very general belief that much mineral wealth has still to be discovered. So it is with iron ores, copper, lead, and other minerals, all



AREA AND POPULATION.
GRAPHICAL PRESENTATION OF THE COMPARATIVE AREAS AND POPULATIONS OF CANADA AND THE UNITED STATES.
Thick lines ▬ *Canada.* *Thin lines* — *United States.*

of which have already been found in Canada in considerable quantities, but of which probably the greatest wealth is at present unknown.

WEALTH.

The figures published by the Census Office enable us to ascertain how the sources of increased population and wealth during the last half-century have progressed in the United States. Between 1850 and 1900, the value of farms and farm property advanced from rather less than four to well over twenty millions of dollars, a more than five-fold increase; the value of the manufactures of the United States increased

* It is shown elsewhere that 1¼ million square miles have hardly been explored at all.

from about a million to over thirteen million dollars, a nearly thirteen-fold advance; and the mileage of railways constructed rose from 9,021 miles to 194,321 miles, a twenty-one-fold increase. These and collateral conditions led to a vast increase of wealth, the gross amount of which, in the form of real and personal property, is stated by the Census Office to have been more than thirteen-fold greater in 1900 than in 1850. Stated in another form the average wealth *per capita* in 1850 was only 307 dollars, whereas in 1900 it was 1,236 dollars, or more than four times as much.

The following table appears to be specially interesting because it shows the rate at which the American railway system, which is now approaching 210,000 miles, has been developed, and therefore suggests what the possibilities of railway development may be in the case of Canada. The figures presented as to shipping indicate the rapid growth of the vast proportions of the internal commerce of the United States, as typified by the increase of the tonnage passing through the Sault St. Marie Canal—that is, from Lake Superior to the lower lakes. Finally, they give a clue to the extent of the home trade, in which only United States bottoms are permitted to take part :—

Railways in Operation and Tonnage of Home Shipping Trade.

Census year.	Miles open.	Tonnage of vessels in Soo Canal. Tons.	U.S. ships in Home trade. Tons.
1850 ...	9,021 ...	—— ...	1,949,700
1860 ...	30,326 ...	403,657 ...	2 807,000
1870 ...	52,222 ...	690,826 ...	2 730,000
1880 ...	93,262 ...	1,734,890 ...	2.715,000
1890 ...	166,654 ...	8,454,435 ...	3.478,000
1900 ...	194.321 ...	22,315,834 ...	4,338,000

The United States in 1850 had less than one-half the railway mileage that Canada has to-day for about four times the population. In the next decade, the United States had added 21,305 miles to their railway system—an advance of nearly 240 per cent.—while the increase of population was less than 40 per cent.

Home and Foreign Markets.

The people of the Dominion are fully alive to the importance of developing their resources, by cultivating alike the home and the foreign markets. The United States has in this respect set an example which Canada will take care to follow. Here are the American figures :—

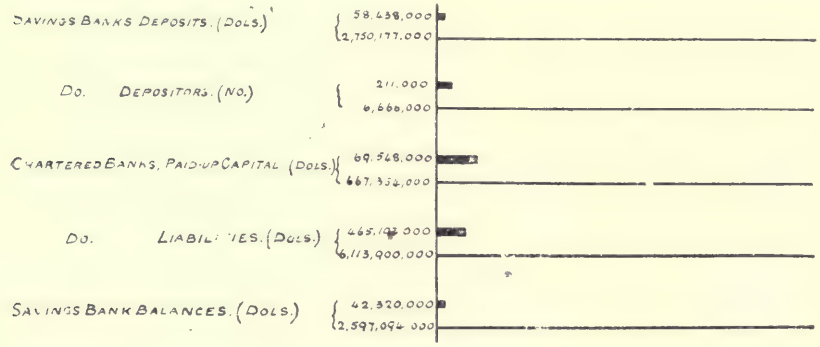
Comparison of Exports of the Agricultural Products and Manufactures of the United States.

Census year.	Values of Exports of United States. Agricultural Products. 1 = 1,000 dollars.	Manufactures. 1 = 1,000 dollars.
1850 ...	108.605 ...	17,580
1860 ...	256.560 ...	40.345
1870 ...	361.188 ...	68.279
1880 ...	685.961 ...	102,856
1890 ...	629 820 ...	151,102
1900 ...	835.858 ...	433,851

It may be added that in 1900, nearly 80 per cent. of the total value of the agricultural products of the United States was retained for home

use, and only a little over 20 per cent. was exported. The figures also show that while in 1880 the exports of manufactures were less than a sixth of the value of those of agriculture, in 1900 manufactures were equal to more than one-half of the exports of agriculture. It will be noticed that the exports of manufactures in 1900 were nearly three times those of ten years before. Despite this vast increase, the exports of American manufactured products in 1900 were only about 4 per cent. of the total value of such products, leaving 96 per cent. for home consumption. This notably confirms the theory, enunciated by Mr. Andrew Carnegie and others, that it is the home market that is best worth cultivating.

The question has often been asked—what is the average value of the *per capita* consumption of manufactured products in a civilised country? The United States supplies an answer through its Census returns. After deducting the value of exported manufactures in 1900, that of the remainder left for American consumption is returned at 2,521 millions sterling, which is equal to £33 per head of the population



BANKING.

GRAPHICAL PRESENTATION OF SAVINGS BANK DEPOSITS, NUMBER OF DEPOSITORS, PAID-UP CAPITAL AND LIABILITIES OF CHARTERED BANKS, AND SAVINGS BANKS' BALANCES (JUNE 30TH, 1902), IN CANADA AND THE UNITED STATES.

Thick lines ▬ *Canada.* *Thin lines* — *United States.*

per annum. At the same average of value, the United Kingdom would consume manufactured products to the extent of 1,386 millions sterling annually. The official value of our exports of manufactures in 1902 was about 232 millions sterling. This would make the total value of British (home) manufactures 1,618 millions, and of this only about 14 per cent. would take the form of exports. It is, however, probable that the American average *per capita* consumption of manufactured products is considerably greater than that of the United Kingdom. So far as Canada is concerned, manufactures are still relatively in their infancy. Nevertheless, it is computed that 40 per cent. of the population of the country already depends on them. The Canadians throw so much zeal, capacity, and knowledge into their great industries, with only a few exceptions, that this side of their material outlook is certain rapidly to advance.

Suitable Industries.

What, then, are the industries for which the Dominion is best suited? If a Canadian manufacturer were asked this question, he would probably answer "for all." Most of those with whom I have had the opportunity of exchanging views have certainly held that Canada not only can, but will, take care that in the long run she gets well to the front in manufactures. It is therefore of interest to inquire into the rate and the extent of growth of some of the leading American industries. Among these, coal, iron, cotton, and petroleum (oil industries) more or less hold the field. Here is a record of the available statistics of these industries in the last half century :—

Progress of Certain Industries of the United States, 1850 *to* 1900.

Census year.	Coal. 1 = 1,000 tons.	Pig-iron. 1 = 1,000 tons.	Cotton used in United States Mills. 1 = 1,000 bales.	Petroleum. 1 = 1,000 gallons.
1850	——	563	595	——
1860	——	821	979	21,000
1870	32,863	1,665	857	220,951
1880	63,822	3,835	1,795	1,104,017
1890	140,866	9,203	2,325	1,924,552
1900	240,965	15,878	3,644	2,661,233

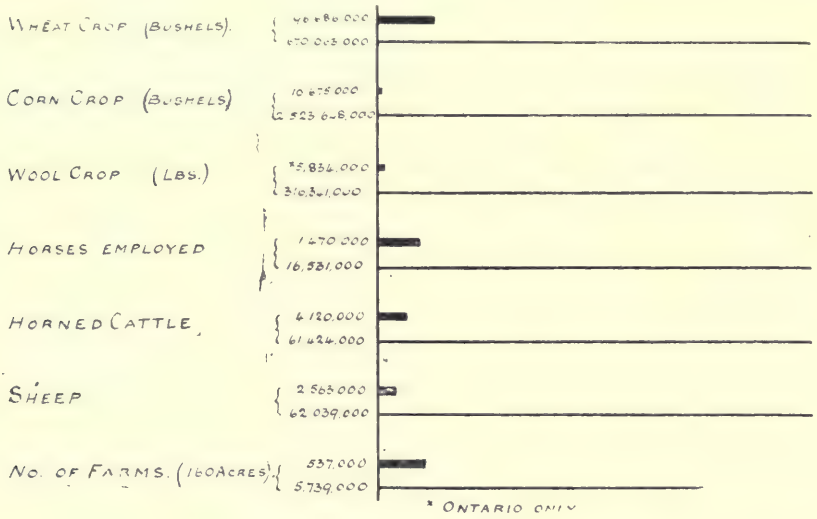
The annual coal production of the Dominion is at the rate of nearly eight million tons, and of pig-iron, 250,000 to 350,000 tons. But Canada has better opportunities of rapidly increasing her output of both in this generation than the United States had in the last. Her cotton and oil industries are somewhat more uncertain.

This comparison and parallel might be carried much farther. It is obvious that it may be applied to every phase and circumstance of national progress. But enough has been said to lead the reader to think for himself as to what are the possibilities of the Dominion within the next hundred years emulating and, mayhap, excelling the United States. It would be rash to prophecy that this is entirely impossible. It is not argued that it is even likely that Canada, with her less congenial climate, and with a probably much larger area of sterile territory, will repeat an experience in economic prosperity and national greatness that has been the wonder of the whole world. But all the same great things *are* possible, and it is not necessary to assume that Canada need emulate or rival any other nation in order to secure the splendid place that is reserved for herself in the future.

A series of seven diagrams which I have had prepared for the special purpose of illustrating the comparative industrial conditions of Canada and the United States, throws a good deal of lurid light on the differences that distinguish the essentials of the two countries.

Such a comparison is likely to be of interest and practical utility in many ways, but more especially because it should enable the reader to appreciate what the United States has done in the direction of national development in the course of a century, and points to possibilities in the case of Canada perhaps not otherwise so readily estimated.

There are those who declare that there can be no parallel in anything except area, because the United States has a different climate, a different mixture of races, different territorial conditions, different agricultural and mineral resources, a different form of government, and many other differences which suggest in most things a contrast rather than a parallel. Those who argue thus can hardly know their Canada. Those differences do indeed exist, but that does not mean that they are in all cases against Canada. It is certain that the Dominion has over a large area at least as fertile a soil as that of any part of the United States. In the Province of Manitoba, and in the Territories of Alberta, Assiniboia, Saskatchewan, and New Ontario, crops are grown that nothing similar in the United States can beat, or, in most cases,



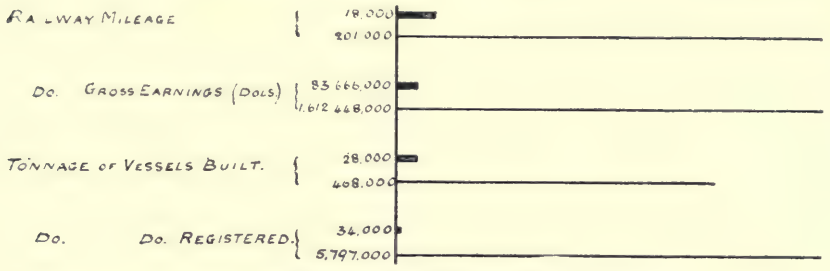
AGRICULTURAL CROPS, Etc.
Graphical Presentation of Wheat and Corn Crops, Wool Crops, Number of Farms of 160 Acres and upwards each, and Total of Cattle in Canada and the United States.
Thick lines — *Canada.* *Thin lines — United States.*

equal. The mineral resources of the country are, as yet, very far from having been fully explored, so that no comparison of mineral conditions, even of an approximate character, is possible. But it is more or less clearly established that in the North-West Territories there is a continuous coalfield of 67,000 square miles in extent, which is stated to be larger than any single coalfield in the United States; iron, copper, and lead ores are found in many different localities, gold and silver are also mined successfully, and certain minerals, such as nickel, asbestos, etc., are found in the Dominion in greater abundance than anywhere else.

The attentive student of the conditions that make for national growth and prosperity must, on the whole, be struck with the many Canadian conditions that assimilate the one country to the other. But he must be still more struck with the vast disparity which now prevails

in the extent and character of their development, and he is likely, for that reason, to ask why, in the last hundred years, the progress of the one country should have been so much more remarkable than that of the other? The answer is partly to be found in the different circumstances under which the two countries were exploited, partly in their varieties of climate—Canada having for generations been designated "The Lady of the Snows," as if to indicate universal rigour and sterility—and partly in the, perhaps, more chequered political history of the Dominion.

There still is, and there must for generations to come continue to be, a great gulf fixed between the two countries, in everything except that which nature has done for them in respect of area and natural resources. The official records show that Canada has a greater area, both of land and of water, than the United States, but there her supremacy would seem to end for the present. The population of the



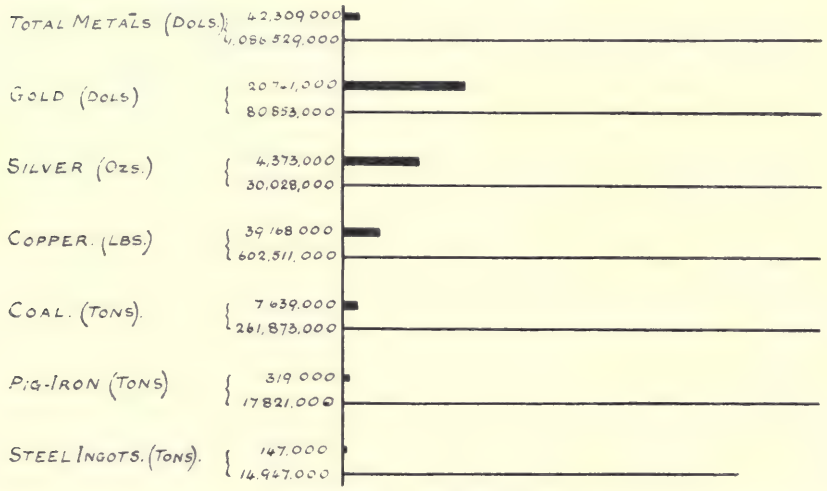
RAILWAYS AND SHIPPING.
Graphical Presentation of Railway Mileage in Operation, Gross Railway Earnings, and Tonnage of Vessels Built and Registered in Canada and the United States.
Thick lines — *Canada.* *Thin lines* — *United States.*

United States is not only infinitely greater, but, despite the inducements now offered for settlement in the Dominion, it is increasing at a much more rapid rate, alike in respect of natural increase and of immigration. The disparity in the latter is not likely to be maintained to anything like the same extent as at present. As the case stands, its volume in 1902 was nearly nine times greater on the one side of the line than on the other.

The same features of disparity appear in the conditions of transportation. At the present time, Canada has only one-eleventh part of the volume of railroad mileage laid down in the United States, while the gross earnings of Canadian railways in 1902 were only one-twentieth of those of the other country. An equally remarkable contrast appears in shipping progress, Canada possessing only one-seventeenth of the shipbuilding trade of the United States, and about $\frac{1}{170}$th of the tonnage on the national register. This is, perhaps, one of the greatest disadvantages under which Canada labours to-day. There can be no surer foundation for the rapid and stable development of a new country than ample railroad and shipping resources, and until Canada can provide these in more ample measure, her advance is certain to be much more halting than it would otherwise be. She may

possibly profit by a close study, and more or less vigorous reproduction, of the conditions under which railroads were built on the other side of the line.

The development of railways and the advance of mineral industry largely hang together. Without the one it is not to be expected that much progress can be made with the other, unless where the minerals are mined, as they are in Cape Breton, close to, and even under, the sea. It is not therefore surprising that although Canada may finally be found to have as large coal and iron ore areas as the United States, her output of coal is only one-thirty-fourth part of that of her neighbour; her output of pig-iron, only one-sixtieth part; and her output of steel only $\frac{1}{102}$nd part. These figures prepare the reader for the final announcement on this head that the total value of the metallic products



MINERAL PRODUCTION.

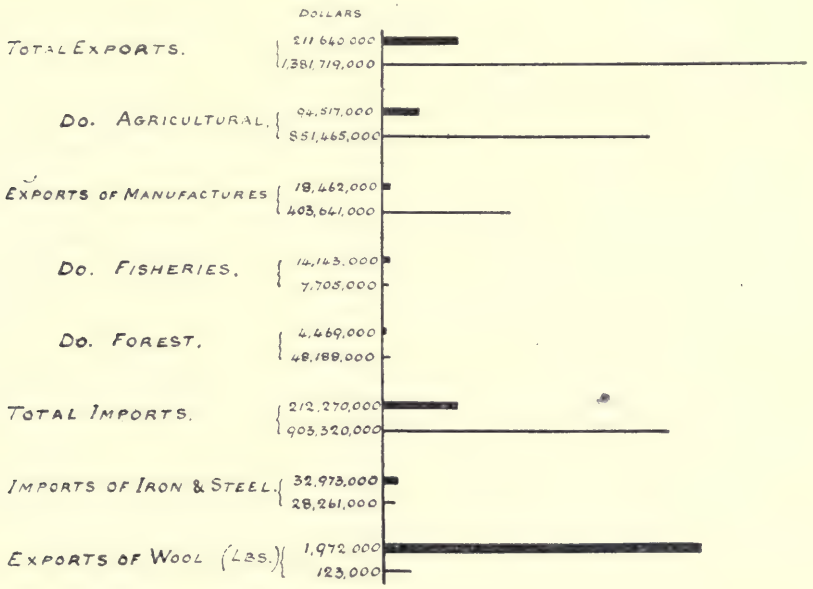
GRAPHICAL PRESENTATION OF TOTAL METALLIC PRODUCTS, INCLUDING SEPARATE FIGURES OF GOLD, SILVER, COPPER AND COAL PRODUCTION, AND MAKE OF PIG-IRON AND STEEL INGOTS IN CANADA AND THE UNITED STATES.
Thick lines — Canada. Thin lines — United States.

of the Dominion is only one-twenty-sixth part of that of the metallic products of the other country. It may be added that in respect of gold production, Canada comes nearer to the American standard than in other minerals, producing that metal to the extent of one-fourth of the value of its output in the United States.

The diagrams which illustrate the comparative agricultural circumstances of the two countries show immeasurable superiority of product on the part of the United States, despite the larger area owned by the Dominion. It will be noted that the wheat crop of the latter is only one-seventh part of that of the former, that the total value of exports of agricultural produce is only one-ninth part, and that the farm stock employed is almost ludicrously less, having regard to the possibilities of providing "feed." If there is one thing that the Canadians have made up their minds to alter quickly, this is that one thing. They believe that they can, in the course of a few years, provide practically

all the foodstuffs required by the Mother Country, and they are applying themselves diligently to this end. Obviously, this must mainly be a function of population.

The foreign trade of the two countries presents some remarkable contrasts. In the matter of exports, Canada cuts a much better relative figure than she does in some other directions, inasmuch as the total exports of the United States are only six-and-a-half times greater than her own. But this result is mainly dependent on exports of the products of fisheries and of agriculture, for in manufactured products the export trade of the United States is twenty-two times greater. In respect of total imports, Canada's trade is nearly one-fourth of that of the



IMPORTS AND EXPORTS.
GRAPHICAL PRESENTATION OF VALUES OF IMPORTS AND EXPORTS OF CANADA AND THE UNITED STATES.
Thick lines ▬ *Canada.* *Thin lines* — *United States.*

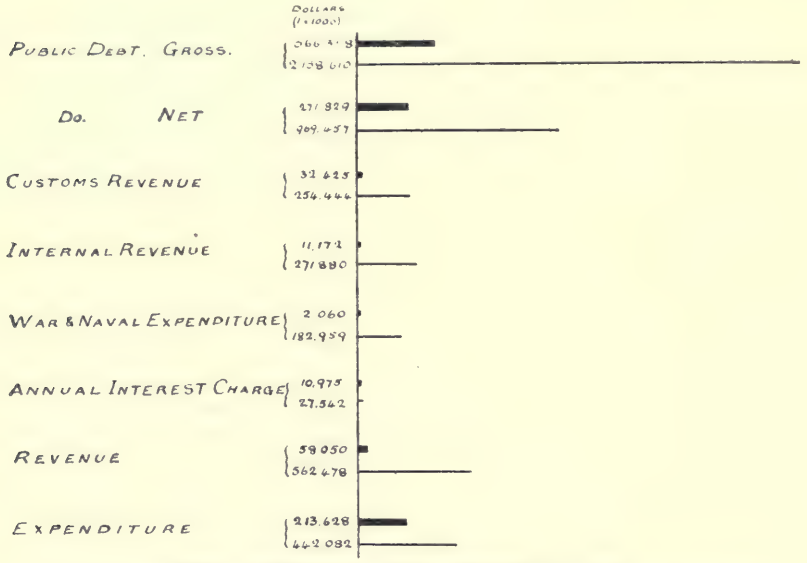
United States, while her imports of iron and steel are materially larger than those of her neighbour.

The last two diagrams that it is proposed to present, both show the financial aspects of the countries dealt with—the first in respect of debt, revenue, and expenditure; and the second in respect of banking conditions. Neither country has much cause to be ashamed of its debts, for neither has been a spendthrift in relation to its resources and revenue. The public debt of the Dominion is less than 50 dollars (£10) per head of the population; the net debt of the United States is only about 15 dollars (£3) per head.* The public debt of Canada

* In the *Statistical Year-book of Canada* for 1902, this debt is stated at 27·32 dollars, per head, but then this figure does not take into account the cash in the treasury.

per capita is less than that of any one of the Australasian Colonies, Natal, the Cape of Good Hope, or Newfoundland, and she has, of course, considerable assets, in the form of railways, canals, and other public works, to set against it.

We have already seen that the total imports of Canada are rather less than one-fourth of the American total. On the other hand, the revenue from Customs duties is only one-eighth of the American figure, which is naturally the result of a lower range of tariff duties. The internal revenue of the Dominion is, however, only a twenty-fourth part of that of the United States, which is relatively less than the revenue from Customs, and probably the smallest internal charge *per*



DEBT, REVENUE, AND EXPENDITURE.
GRAPHICAL PRESENTATION OF PUBLIC DEBT, REVENUE, WAR AND NAVAL EXPENDITURE, ANNUAL INTEREST CHARGE, ETC., IN CANADA AND THE UNITED STATES.
Thick lines — *Canada.* *Thin lines* — *United States.*

capita shown by any fully civilised country, amounting, as it does, to only about 8s. per head, against 13s. 6d. per head in the United States. Still more striking is the extraordinary immunity enjoyed by Canada in respect of war expenditure, her *per capita* outlay on this national need amounting to only about a sixth part of that of the United States, and less than a twentieth part of that of the United Kingdom. Expressed in *per capita* terms, the United Kingdom spends over 30s., Canada less than 1s. 6d., and the United States about 10s. per head, on naval and military affairs. Nevertheless, the expenditure of the Dominion, as the chart shows, is about one-third of that of the American Republic; while her annual interest debt charge is more than one-third that of the same nation.

So far as banking is concerned, an exact comparison of the two countries is difficult, because of the differences that distinguish the

banking conditions of the two countries, and for this reason the figures are put forward with some reserve. There can, however, be no manner of doubt as to the vastly greater wealth of the United States. That wealth was computed in the Census Returns of 1900 at 94,300 millions of dollars, or about 19,700 millions sterling; and banking is naturally, more or less, a function of wealth.

It is hoped, and also believed, that the figures here presented will afford the basis of a comparison of the economic conditions of two countries the progress of which is of very notable concern to Great Britain, both of which may claim to be in a special degree her own children. The comparison is, therefore, not without its sentimental side. But its economic side naturally predominates. The Canadian and the Englishman, on a perusal of these figures, will both be liable to ask—Within what time, if ever, will the Dominion reach the present standard of the United States in the ordinary conditions of national progress here set forth? Upon the ultimate reply to that question must largely depend the character of the relations of the Mother Country and the Dominion.

Meanwhile, we need hardly point out that all the conditions here compared require to be ascertained and weighed by the business man who desires to make a forecast, alike of the needs of Canada, and of the methods by which, and of the period within which, those needs are likely to be met. This consideration, in the meantime, is, of course, more especially applicable to the development of population, transportation, and wealth.

CHAPTER X.

Some Wants of the Dominion.

It is difficult to gainsay the presumption that the Mother Country has been much more indifferent to the claims, the interests, and the splendid opportunities of Canada than the Canadians have had a right to expect. How few of the people of the United Kingdom have had anything like an adequate idea of the magnificent country in the West that forms so considerable a part of the British Empire? What imperfect sympathies have been entertained by British statesmen, British financiers, and British business men generally, with the wonderful resources and possibilities of a territory that is only equalled in area among the great countries of the world, by Siberia and China, and is excelled in beauty, in natural wealth and in variety of resources, by none?

Knowing their country as they do to its heart's core, it is not surprising that Canadians have felt somewhat resentful of this neglect. On the whole, they have regarded the attitude of their fellow subjects "at home" rather in sorrow than in anger. The Canadian character has always been patient and patriotic, slow to anger, and greatly prone to the motto, *festina lente*. They have had need for patience and forbearance. It has been their lot to stand by with but little protest while the people at home were investing their capital abroad in wild-cat schemes of all kinds, and allowing the people of the United States to enter into possession of some of the finest and fairest properties the world has to show to-day. For many years past the people of Canada have asked the Motherland for bread in the form of capital, and they have only been given a stone in the form of plausible promises that something might be expected by and by.

If the people of the United States had not had their hands so full with the working out of their own salvation the people of the Dominion might not have been so starved for capital to develop their great resources as they have been.

Canada differs essentially from the United States in this respect, that its natural resources are yet more or less virgin, alike in respect of agriculture and minerals. The first wheat was shipped from Manitoba so recently as 1870. The first pig-iron made in Canada under present-day conditions was produced less than twenty years ago. The first coal produced elsewhere than in Nova Scotia dates back to 1850; but the first coal was produced in British Columbia in 1855, and the first coal in the Crow's Nest Pass Coalfield was only produced a few years ago.

The fruit-growing capabilities of Canada are still far from having been ascertained, but the experience of the fruit-farms in the Annapolis Valley of Nova Scotia during the last twenty years proves that they are of the first importance. The fisheries of Canada have been a funda-

mental source of wealth for some generations. It is more than a hundred years since Burke reminded the House of Commons that those engaged in this industry on the Atlantic Coast "vexed every sea with their toils."

But on the Pacific, at least, the great salmon and other fisheries on the Fraser and the Columbia Rivers are still far from exhaustion, and so with the lakes which provide the Dominion with a total water area of over 100,000 square miles, or some hundreds of miles more than the total land and water area of Great Britain, and with almost every variety of fresh-water fish, while the sea fisheries belonging to the Dominion are a perennial source of wealth. Finally, one can only say of the timber resources of the Dominion that they appear to be boundless. The total area of forest lands has been computed at over a million square miles, which is more than twice the known forest area of any other country. This valuable source of wealth is every year becoming more valuable. The timber lands in the older Provinces of New Brunswick and Nova Scotia have now been largely depleted; and when I was at Fredericton, the capital of the former Province, I was informed by Lieut.-Governor Snowball that the timber lands which remain have nearly doubled in value within the last ten years, and are likely to continue to appreciate.

A Hortatory Comparison.

When I was in Vancouver a leading journal—*The Daily World*—appeared with a trenchant article on "The British Investor and British Columbia," in which the following passages occur:—

"It is in apparent lack of sympathy, of appreciation of the loftiness of the Colonial aim, of friendliness and kinship on the part of the men of the Old Land, that the greatest force possible of utilisation for the cultivation and development of the annexation sentiment in Canada may exist. The touring delegates have been told time and again during their stay in Canada that all the talk of annexation feeling is purely fictitious. They have been assured that neither the oratory of the annexation champions of the neighbour republic nor the vapourings of the pro-annexation press fall upon willing ears in Canada. Nor do they. But these are not the instruments that work insidiously toward the annexation goal. American sympathy and support in the dark days of first advance into the wastes count infinitely more. Let a British Columbia prospector report new territory that to him seems good. He goes to the British capitalist and tells him of the prospect, seeking his co-operation in further exploitation. 'Show me what you have definitely,' says the British brother, 'and if the security is tangible and the interest upon the investment assured, the money is yours to command.' Distance and ignorance of the primitive conditions becloud the Old Country view of the situation. In the slashing of the site for the new nation, comparatively little aid is therefore to be looked for from the kinsman across the sea.

"But the speculative American is ever at the side of the Canadian pioneer. At the first report from the pathfinder he pushes with him into the Canadian wilds. He 'takes the chance' with him. If it fails, he does not grumble that he has been deceived. He knows that the best judgment may be astray as to the prospects of what may be either

a mine or a hole in the ground. If it is a mine, he quite probably in time sells out the proven proposition to the English investor who holds to his pounds, shillings, and pence until the security is in sight, takes his English millions, and passes with them to build up new cities under his own flag. The memory retained by him of his erstwhile partner is that of one who, side by side with him, 'took the chance'—and it is not the disposition of humility, and, least of all, of Western humanity, to entertain other than kindly feelings toward such.

"In the sentiments of mutual understanding, mutual confidence, mutual dependence that are thus developed as between the British Columbia pioneer and his American supporter from the South, as contrasted with the suspicion of a considerable proportion of the British investing public, the lack of sympathy in that quarter, and the insistence upon the element of risk to the party of the second part being eliminated, is to be found the real danger of a spread of sentiment that is closely akin to that upon which annexation to the United States would necessarily be based should the dream of Americans ever take form—not through the desire of Canadians to change their flag, but through the refusal of the typical Britisher to understand Colonial affairs."

These comments are the reflex of a great body of public opinion, not in British Columbia only, but throughout Canada generally.

American Keenness *v.* British Indifference.

Sir C. H. Tupper, speaking at a banquet given to the delegates at the Vancouver Hotel, at the town of that name, on September 11th, 1903, made the following remarks :—

"Some people in the Motherland consider oftentimes some two-penny half-penny Republic in the South American Continent of more importance than the Colonies. I ask you to carefully consider the enterprise of the nation we have to the south of us. You do not realise what they are after. There are no people to-day who appreciate more keenly the great resources and the natural wealth and the aptitude for business possessed in the King's dominions in North America than the people to the south of us. Not only are their people coming in to us, but they are looking for a place for profitable investment in this part of the Empire ; and they appreciate us so much that you find their capital and their enterprise everywhere in our midst. One result of this is that we have received a great accession to our wealth, and their old love for the British institutions seems to come back to them. I do not fear, therefore, any ulterior motive resulting from this American invasion, but it is worth while for our friends and brothers from the British Isles to consider how far they will allow these men to lead in this fashion, and how far they will allow them to keep these opportunities for profitable investment."

What is the true explanation of the backwardness of the people of the Mother Country in going into Canadian investments ? One writer has suggested that the true inwardness of the fact is that the English capitalists prefer to speculate rather than to organise home and Colonial industry. The Canadian people have certainly some cause for disap-

pointment, not to say resentment, at the indifference with which British capitalists have treated their country and its resources, when they note the much greater readiness with which the people of the United States take up their industrial projects.

This view of the matter has been endorsed by a correspondent of the *Times* (London), who, in a recent contribution to that journal, stated that "many of the shrewdest business men of the United States manifestly look upon the opportunities offered just now by Canada as of the best. The question," he adds, "is often asked in Canada whether British capitalists have lost their initiative and their energy in thus allowing their rivals of the United States to get ahead of them in fields which have the promise of so large a future." The same writer has truly noted that "the American investing in Canada seldom does so as a mere speculation, the results of which he leaves in the hands of others. He comes himself and watches the application of the capital which he or his friends have decided to apply to any given undertaking."

The attempted development of metallic mines in British Columbia and elsewhere, with British capital, has often been a failure. Even coal mining has not been by any means too successful, and the amount of money expended in the opening up of coal properties has often been out of all proportion to the results accomplished, as, for example, in the case of the Dominion (No. 2) Mine at Sydney, on which considerably over two million dollars have been embarked. The American capitalists who have entered Canada as such have had their share of such failures. Two of the most notorious of the lot—the Dominion and the "Soo" iron and steel plants—have been almost wholly founded by Americans on American capital. Hence, the American who "watches the application of his capital," does not always fare better than the Britisher who stays at home.

There is, however, one method adopted by the typical American that appears to be far more commendable than the usual policy of the stay-at-home Briton. The American usually makes up his mind in advance as to how much he is prepared to spend in a given exploration or enterprise. That is usually an amount well within his means. If, after trial or exploration, he finds that the enterprise does not turn out well, he gives it up and goes elsewhere. American mining engineers have, in this way and on this footing, explored a great many of the most promising mining locations in the Rocky Mountains, and on an average of their efforts they are said to have done pretty well. The thing is easy for the American, whose domicile may not be more than a few hours' distant. It is difficult for an Englishman, whose home is more than six thousand miles away, and who must for that reason trust to the discretion and honesty of others—a course that he has often had cause to regret.

And yet no one can blame the stay-at-home capitalist if he hesitates to go into Canadian mines and manufactures, for their financial history has not been entirely satisfactory. The details of the great industrial enterprises at the "Soo" and at Sydney, Nova Scotia, are elsewhere presented, showing that in both cases there has been an enormous waste of capital and a more or less unsavoury record, which has not, so far, been condoned by a reasonable amount of success. Such cases have not been

infrequent. Even the enterprise of the Nova Scotia Coal and Iron Company, of which Mr. Graham Fraser has been the capable general manager, had a long struggle with adverse financial results, and has lately found its legs largely as a result of a lucky speculation in iron ore lands.

Bearing these considerations in mind, it seems to me that the Canadians have often been unreasonable and unduly querulous with their fellow-subjects at home because they have not found more capital for the development of their country. Here is a fair sample of a too common complaint and criticism :—

"British Columbians have, to a large extent, forsworn the ease and luxuries of the older civilisation ; they have faced the task of empire-building in its truest and surest sense; they are in the vanguard of the workers-out of the destinies of the Empire ; they have the indomitable courage of the pathfinders, the enthusiasm, the strength to conquer. But they require the sinews of war in battling for victory over the wilderness. And naturally they turn in this connection to the brothers at home, for it is with loving loyalty that they are building here by the western sea a new and vigorous nation to be a source of strength and dependence to the flag in years and centuries that are to come.

"'Ours the part of the struggle and toil,' they say to the capitalists 'at home.' We go into the hills and fastnesses, we leave behind us the smiling homeland that we love so well ; we face the privations, the discomforts, the misfortunes of the pioneer ; we look to you to venture with us a share of your gold. When we find in the wilderness what we believe is the material for wealth we shall advise. Then it is your part to send your experts to tells us if our judgment has been good, and if it has in their opinion, we look to you to help us with money in what should be our mutual labour and our mutual pride.

"There is no desire on the part of British Columbians to wrest fortunes from the pockets of the British capitalist. What they seek is the co-operation of the British man of substance in enterprises of mutual profit that eventually shall prove items in the establishment of a new and important portion of the Empire. If there exists that confidence which should exist between the Colonial, who is the prospector in effect, and the Englishman or Scot, who is the capitalist, the partnership is as it should be. The world had hoped, as many British Columbians had also hoped, that the present visit of the representative British men of business would have led our guests to know us as we are, disarmed their somewhat unjust suspicions, and led to the extension by them of the right hand of brotherly fellowship, so that with them, and their people to whom they will report, we, in this outpost of the Empire, may go forward strengthened and supported in the great work of colonisation, which is really empire-building. Perhaps this will be the good result when the guests of to-day return to their respective homes, and have had time to think the situation over. British Columbians hope it will, for it is upon the sympathy, the confidence, and the support of their fellow countrymen that their first reliance is placed. Not until these fellow countrymen fail them do they accept the stranger as an ally."*

* The *Vancouver World*, September 12th, 1903.

Some Canadian Reflections.

These sentiments, and their like, appear to the Canadians to be fully justified by the attitude adopted by the Mother Country. I may go further, and say that they are founded on their much higher and fuller recognition of their own importance as a people and as a country than anything that was heard of only a few years ago. While I was in Toronto one of the leading journals there published an important article, which I may quote in support of the view that the people of the Dominion are undergoing, if they have not already undergone, a notable change from this point of view—a change which is not likely to be for the better if it develops the "spread-eagleism" of one country or the jingoism of another, but which cannot be deprecated so long as it stops at a dignified and self-respecting assertion of conscious strength:—

"Canadians must feel a sense of their great possessions such as they never felt before. We are beginning to appreciate the fact that what we possess as a people is worth while. Had we been cognizant of the worth of the country we would never have permitted the United States to buy Alaska from Russia. British diplomacy has done nothing for us but to waste our birthright in silly barterings with the United States. The extension of the Grand Trunk Pacific by way of Edmundston in order to get around the section of Maine which extends up into the Dominion, is the result of well acknowledged fraud, for that whole section of country belongs to us by right, and was only given away to make easy some diplomatic deal with the United States. Thank Heaven, Canada is doing its own trading now, and will persist in its efforts to obtain what belongs to it. We have been regarded in the past as an 'easy thing,' and that we now refuse to be the lamb on the altar is exceedingly vexatious to the United States. It may as well be understood by our friends in the Republic that Canada is not giving anything away. It may be a disputed question as to how we should conduct our business with the Republic, but with the whole Empire gradually taking on the phase of protecting itself against the policy of protectionist peoples who seek to obtain everything and give no favours in return, we may be sure that it will not be long before a consideration is demanded for every privilege granted. As the ages grow, the Islands which once constituted Great Britain must feel smaller, and reliance upon the outlying millions of miles of territory must become greater. The policy which should govern Canada is the retention of its autonomy, a desperate fight against losing any of its acres, belief in itself, which should be fostered by legislation which only recognises the Motherland as a relative, and not as a restraint."*

The two great wants of Canada are no doubt men and money. These are the chief requirements of all young communities, and, at a certain stage in their development, perhaps the most difficult to procure. It is certain that Canada has, until quite lately, found it a hard task to enlist in her expansion the capital of outside nations. European capital still fights shy. The capitalists of the United States, who are more on the spot, are now realising that Canada is a good field for the invest-

* The *Toronto Globe*, August 28th, 1903.

ment of capital when judiciously expended. American (United States) capital has been largely invested in agricultural and forest lands; in copper, coal, nickel, and other mines; in fisheries and ranching lands, and in many other directions. Hitherto, however, as we have just seen, British capital has stood more or less aloof, greatly to the chagrin and disappointment of the Canadians, who are both annoyed at the fact that the Americans are getting a firm grip on the best investments that are available, to the loss of British investors, and resentful of the neglect of the opportunities afforded by their country which British capitalists have shown.

There are, probably, many directions in which British capital could at present be profitably invested in the Dominion, alike in the east and in the west, but two things are essential to the ultimate success of such investments—the first, that the conditions and outlook of the country should be thoroughly mastered in their several aspects; and the next, that the best advice and experience possible should be at the command of the investor, so as to avoid the heavy loss or waste of money which has characterised some of the greatest industrial enterprises hitherto started in the country. The history of such concerns as the Dominion Iron and Steel Company, the Clergue enterprises at the Soo St. Marie, and some of the mining projects in British Columbia, should serve as a warning and a guide to the future.

Section II.

CHAPTER XI.

Mineral Resources of the Dominion.

The Coalfields and the Coals of Eastern Canada.

There is probably no country in the world with a greater wealth of mineral fuel than the Dominion. The ascertained coal areas are computed at 97,200 square miles,* "not including areas known, but as yet undeveloped, in the far north," which may be almost as much again. The principal fields are (1) those of Nova Scotia; (2) of the North-West Territories; (3) of the Rocky Mountains; and (4) of British Columbia. We shall first speak of the coalfields and the coals of Nova Scotia.

The three principal coalfields in Nova Scotia are :—

	Area in Square Miles.	No. of Seams.	Thickness in Feet.
Sydney	500 ...	12 ...	3 to 12
Cumberland	400 ...	Not determined.	
Pictou	35 ...	16 ...	3 to 34

Mr. Edwin Gilpin, Chief Inspector of Mines, speaks as follows of the quality of the coal in Nova Scotia :—

"The coal itself presents some features of difference. Broadly speaking, the coals of Cape Breton are more bituminous than those of Pictou and Spring Hill. The coals of these districts are rather of the free-burning type, although in some cases coking, but not, as in the case of the Sydney (Cape Breton) coalfield, almost invariably coking and adapted for gas making.

"The generally higher percentages of ash in the Pictou and Spring Hill coals may be connected with the presence of the including beds of shale, as compared with the small ash percentages of the Cape Breton coals associated with a larger proportion of sandstone beds. The lesser thickness of the Cape Breton coal measures and the more bituminous nature of the coals may be contrasted with the free-burning characteristics of the Western coal."

These three coalfields are each entirely distinct, and may be divided as follows :—(1) The Pictou field—surrounding by a huge oval the Stellarton station on the Intercolonial Railway, north-east of Halifax. (2) The Spring Hill station, on the Intercolonial Railway, north-west to

* *Statistical Year Book for* 1902, p. 450.

the Bay of Fundy. (3) The Cape Breton field, in the south-east extremity of the island of that name. The principal companies operating in the respective sections are:—Pictou—the Acadia Coal Company, and the Intercolonial Coal Company; Spring Hill—the Cumberland Railway and Coal Company; Cape Breton—the Dominion Coal Company.

The Cape Breton mines are usually within easy reach of the surface; the pitch of the seams is, generally speaking, very slight; they are comparatively free from fire-damp, little broken up by faulting, and altogether present the most favourable conditions for large outputs and low cost of production. In 1892 the total coal production of the island

LOOKING DOWN INCLINED RAILWAY FROM TOP OF BANK HEAD, ALBERTA RAILWAY AND COAL COMPANY, LETHBRIDGE.

of Cape Breton was less than 1,000,000 tons. In 1902 the total production exceeded 3,500,000 tons, and of this quantity one company—the Dominion Coal Company—produced 3,000,000 tons. With the exception of the Old Mines, Sydney, where safety-lamps are used and ordinary explosives prohibited, the mines are worked with open lights, and black powder is used for blasting coal; the mode of working is bord-and-pillar. Coal-cutting machines are rapidly displacing hand-pick mining, the Dominion Coal Company producing no less than 76 per cent. of its total output by machines, and the Nova Scotia Steel and Coal Company 33 per cent., which will shortly be increased to 50 per cent.

In Pictou and Cumberland the coal seams pitch at a considerable

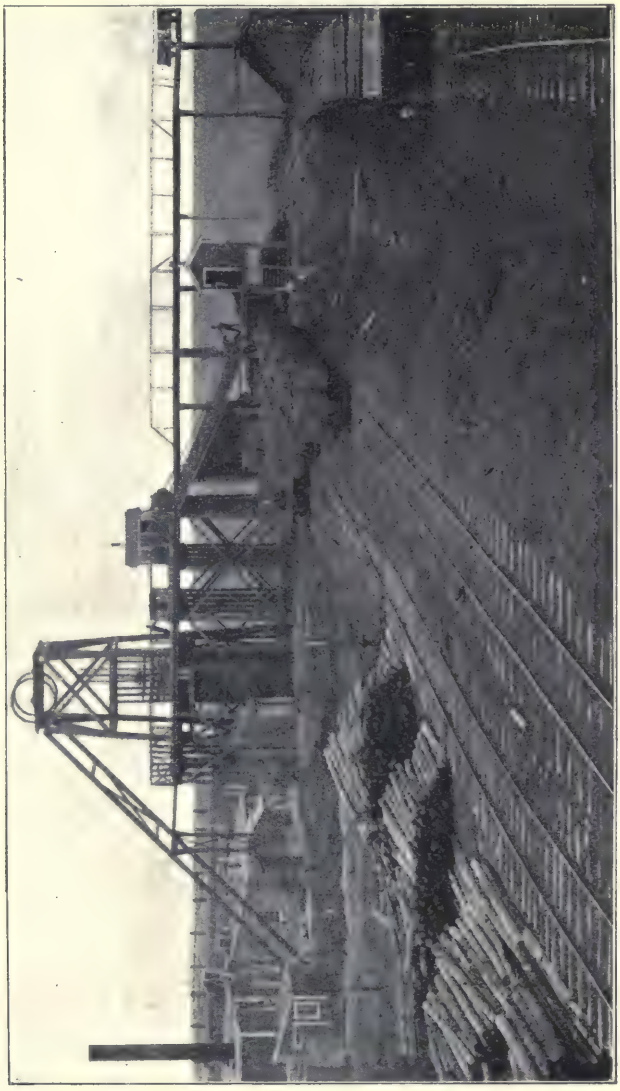
angle, anywhere from 16 to 40 degrees; the seams give off considerable fire-damp, and with the exception of one or two small surface winnings, all the mines are worked with locked safety-lamps, and where blasting is permitted none but the so-called flameless explosives are used. The

SHAFT No. 1, WITH COAL TRESTLE IN DISTANCE, FROM BANK HEAD, ALBERTA RAILWAY AND COAL COMPANY, LETHBRIDGE.

mode of working is both by bord-and-pillar and longwall, the latter being altogether adopted in the deeper seams of Pictou County. The total output of the Mainland Mines in 1892 was 903,979 tons, that of 1902 being 1,122,407 tons.

The Pictou field has several thick seams of coal, the well-known

Foord Pit Seam showing a section of 34 ft. 7 in. of coal; and at the Albion Mines five seams show an aggregate thickness of 84 ft. of coal. In Cumberland County much good coal has been found. At the Joggins Colliery, on the Bay of Fundy, the coal measures expose more



SHAFT No. 1, SHOWING CARS BEING LOADED WITH LUMP, NUT AND SLACK COAL, ALBERTA RAILWAY AND COAL COMPANY, LETHBRIDGE.

than 14,000 ft., extending from the marine limestones of the lower carboniferous to the top of the coal formation. The beds that appear at the Joggins can be traced north-eastward for many miles. The total production for the county in 1892 was 456,229 tons, and that for 1902 was 555,170 tons, so that the progress has been slow.

The largest coal-producing enterprise hitherto established on Canadian soil is that of the Dominion Coal Company—which has a capital of 21,000,000 dols., 6,000,000 of which is 8 per cent. preferred stock, has an area of coal lands exceeding 90 square miles, and is largely increasing its annual output. The largest shaft has a depth of 850 ft., and it is estimated that it will shortly have a capacity of 6,000 tons per day.

The principal colliery belonging to the Dominion Coal Company may compare in equipment and output with some of the best at home. It is known as the Dominion (No. 2) Mine. "The total capital expenditure up to September, 1903, on this mine was about 2,500,000 dols., and the output at that date was about 2,000 tons per day. This is a larger

DOMINION NO. 2 COLLIERY, GLACE BAY, CAPE BRETON.
(Claimed as the largest Coal Shaft in the World.)

sum than the total capital expenditure of the Dominion Coal Company in the purchase and equipment of the whole of its mines from 1893 to 1896, when the output had reached 1,200,000 tons per annum, or twice the present capacity of Dominion No. 2. This expenditure is designed to yield a very much larger output, but it is argued that the cost sheet demonstrates that coal will never be produced so cheaply in such an enormous mine, equipped for 5,000 tons per day, as in the older mines with a capital limit of half that amount. It is stated that the capital account in none of these other individual mines stands at more than 500,000 dols., and Dominion No. 1 Mine had attained an output of 2,000 tons a day long before its capital outlay reached that figure. In 1893, the first year after the Dominion Coal Company acquired and operated the Cape Breton mines, the cost stated was 1 dol. 15 cents, according to a published prospectus. After equipment the cost fell, in

1896, to 85 cents a ton, and the management promised that it would be 75 cents the following year. Then came a change both in management and policy, and ever since the cost has steadily risen until it is now 1 dol. 35 cents." *

The Dominion Coal Company works in Nova Scotia under a lease of 99 years. The royalty payable to the Canadian Government for the whole of that time is 12½ cents (6½d.) per ton. The coal assays from 59 to 66 per cent. of fixed carbon; from 27·5 to 34·2 per cent. of volatile combustible matter; from 3·6 to 5·3 per cent. of ash; and from ·81 to 1·75 per cent. of sulphur. At the Dominion works the yield of coke from this coal is 74·64 per cent.; of ammonia sulphate, 32·91 lb. per ton; of tar, 12·89 gals.; and of benzol, ·103 gals.

Area of the Pictou Coalfield.

This district, situated at New Glasgow, has, so far as exploratory work has been carried, an area of about 35 square miles. Work now being done is expected to show that the seams of this district extend as far as the town of Pictou, giving it an area of many hundred square miles. There are a number of collieries here operated by the Nova Scotia Steel and Coal, the Acadia, and the Intercolonial Companies. The coal is used for the same purposes as that from the Sydney coalfield—coking, gas, steam, etc.

Cumberland and Inverness County Coalfields.

This large and still partly unexplored district is estimated to cover about 350 square miles. The principal operations are at Springhill, where the Cumberland Coal and Railway Company operates mines yielding between 400,000 and 500,000 tons a year. Smaller collieries are found extending from the Joggins to the Styles Mines, a distance of about 20 miles. The coals are bituminous and coking, and are largely used on locomotives in the lower Provinces. Coal beds are known at many other localities, but not worked except at De Bert, near Truro. Cannel coal, oil-shales, etc., occur in the different districts, but as yet have received little attention.

In Inverness and Victoria Counties there are some recently-opened collieries, which are said to be making good progress.

In 1902 Nova Scotia produced 4,725,480 tons of coal, in which 8,500 hands were employed, so that the average coal output per employé was 556 tons. This compares with an average of 603 tons for the United States, and about 300 tons in Great Britain. The next most important producing coalfield in Canada was that of British Columbia, which produced 1,750,000 tons. The total for the country was 6,903,134 tons.

The Newest Cape Breton Enterprise.

Among the latest colliery enterprises launched at Cape Breton is that of the Cape Breton Coal, Iron, and Railway Company (Limited), which has acquired an area of 63 square miles of coal-bearing lands,

* *Canadian Mining Review*, September, 1903.

and the option of acquiring 28 square miles additional. The seams extending over this area are mainly four in number—their several thicknesses being 9 ft.; 6 ft. 4½ in.; 4 ft. 10 in.; and 4 ft. 8 in. This company proposes to construct colliery and other plant sufficient to enable them to raise 8,000 tons of coal per day, and to ship at the old French port of Louisburg, which has given them a contribution of 30,000 dols. and guaranteed freedom from all taxes for a period of five years. The Jeffrey Manufacturing Company (of Ohio) are installing the electrical plant and the coal-cutting machinery by which the new collieries are to be worked. Houses are being built by the company for the workmen to be employed, at a cost of 1,000 to 1,200 dols. for each double house, to be let at 12 dols. per month for the two.

Western Canada.

In Western Canada the coal-bearing beds vary in quality from lignites to anthracite, in proportion as the metamorphosed area of the

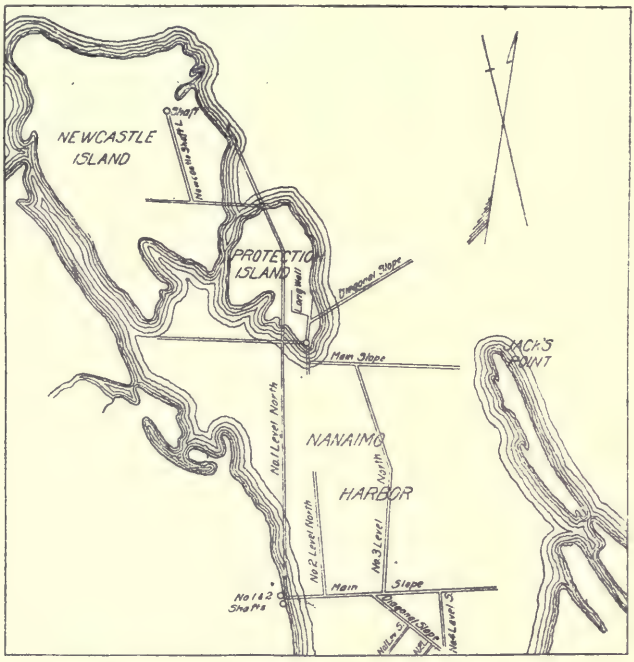
No. 1 Shaft Esplanade, Nanaimo.

Rocky Mountains is approached. In Manitoba, Assiniboia and Souris River Valley, lignites are abundant in thick beds, estimated to yield 7,137,000 tons of fuel per square mile. These lignites contain a large amount of water, and easily disintegrate on exposure. They are, therefore, quite unsuitable for transport, but may be valuable for local use. At Medicine Hat, on the South Saskatchewan, there are nine beds of coal in an exposure 260 ft. high. Two of these are each 5 ft. thick. The whole make up at least 16 ft., and have been estimated to be capable of yielding 5,000,000 tons per square mile. One great seam on the North Saskatchewan maintains a thickness of 25 ft. for three miles, and is traceable over 180 miles.

The coal deposits which have been worked at Turtle Mountain, Alberta, for the last three years, are of notable extent. At the point where it has been attacked, the one seam now exposed stands almost vertically, but at a greater depth it doubtless assumes a more nearly

horizontal position. This one seam is from 14 to 30 ft. thick, but there are several others parallel with and very close to it, each of which has a thickness of from 6 to 20 ft. It is thought that the formation is a part of certain coal-beds which are now being worked in British Columbia, on the other side of the Rockies. Should that conjecture be verified, the deposit, as a whole, may be the largest on the American continent. These coals in extreme Western Canada, like those of the adjoining State of Washington, vary in quality. The Canadian Pacific has been using the output of the Turtle Mountain mines for its locomotives.

The International Coal and Coke Company, which owns extensive bituminous coal lands in Alberta, on the line of the Crow's Nest Pass



MAP SHOWING LOCATION OF NANAIMO COAL MINES, VANCOUVER ISLAND.

Railway, has recently entrusted a well-known Pittsburg coal mining expert with the designing of a coal plant capable of producing an output of 2,000 tons daily. The plans provide that all the machinery will be operated by electricity. Coal will be loaded automatically into the cars from chutes in the breasts of the workings. The motive power for these cars will be electricity, thus doing away with the mule haulage entirely. At this mine the "lorries," a device for carrying coal from the "tipple" to the coke ovens, will also be operated in the same way, and another automatic device will be utilised in loading railway box cars or cars with an open top. About 400 coke ovens will be in operation shortly. The nearest station to these coal areas is Blairmore, which is some four miles east, but the Canadian Pacific Railway has undertaken to build a

station at Coleman. The mine itself has been designated as the Denison collieries.

The expert referred to states that the pitch of the seams at Coleman will permit of the automatic loading of cars from chutes, thus doing away with shovelling altogether.

The Alberta Railway and Navigation Company, with mines at Lethbridge, mine a large quantity of "Galt" coal, which has almost entirely taken the place of American soft coal as a steam producer in this territory. They ship largely over the Great Falls and Canada Railway to points south of the boundary. The Canadian Pacific Railway brings to Fort William for use east and west of that point on their locomotives 110,000 tons of Pittsburg coal. This coal is not used west of Winnipeg, at which point the use of the Galt coal begins.

The Galt mines at Lethbridge are the most important of those yet opened in the North-West. The product is a good bituminous coal. The seam now being worked is between 5 ft. and 6 ft. thick, and is only

PROTECTION POINT, NANAIMO, SHOWING COAL-SHIPPING WHARVES.

30 ft. or 40 ft. beneath the surface of the prairie. The coal-bed has been traced to the west and north-west for many miles. In spite of the duty of 75 cents per ton, a considerable quantity of this coal is sent across the American border. Should the duty be removed, the Lethbridge coal would be likely to find a large American market in the mining country to the south, while supplying the needs of the surrounding prairie regions. The Lethbridge coal is used all along the line of the Canadian Pacific Railway as far as Winnipeg and Port Arthur, where it meets the competition of Pennsylvanian coal brought up the Lakes. Eastward from Lethbridge, and reaching along the American boundary to the borders of Manitoba, are coal measures which have been estimated by Dr. Dawson to cover 15,000 square miles.

Northward to the Saskatchewan, thick seams of coal are visible all along the banks of that river in the vicinity of Edmonton. A domestic coal is delivered in Edmonton and at most points in the country around for about 10s. per ton.

The coal-beds of the Saskatchewan extend far down that river, and

will ultimately be reached by the railway, which is already extended to Prince Albert.

In the North-West Territories and Manitoba, the production of coal in 1902 has been computed at the following figures :—

District.	Tons.
Lethbridge	153,704
Blairmore	75,000
Anthracite	16,550
Canmore	91,400
Souris	64,000

An official work on *Western Canada*, issued by the Dominion Government, contains the following reference to the coal areas in the North-West :—

"Besides the large tracts of forest, both in and adjacent to Manitoba, there are vast coal areas within and contiguous to the Province of such extent as to be practically inexhaustible. It has been discovered that

Coal-shipping Wharf at Nanaimo, Vancouver Island.

between Red River and the Rocky Mountains there are some 65,000 square miles of coal-bearing strata.

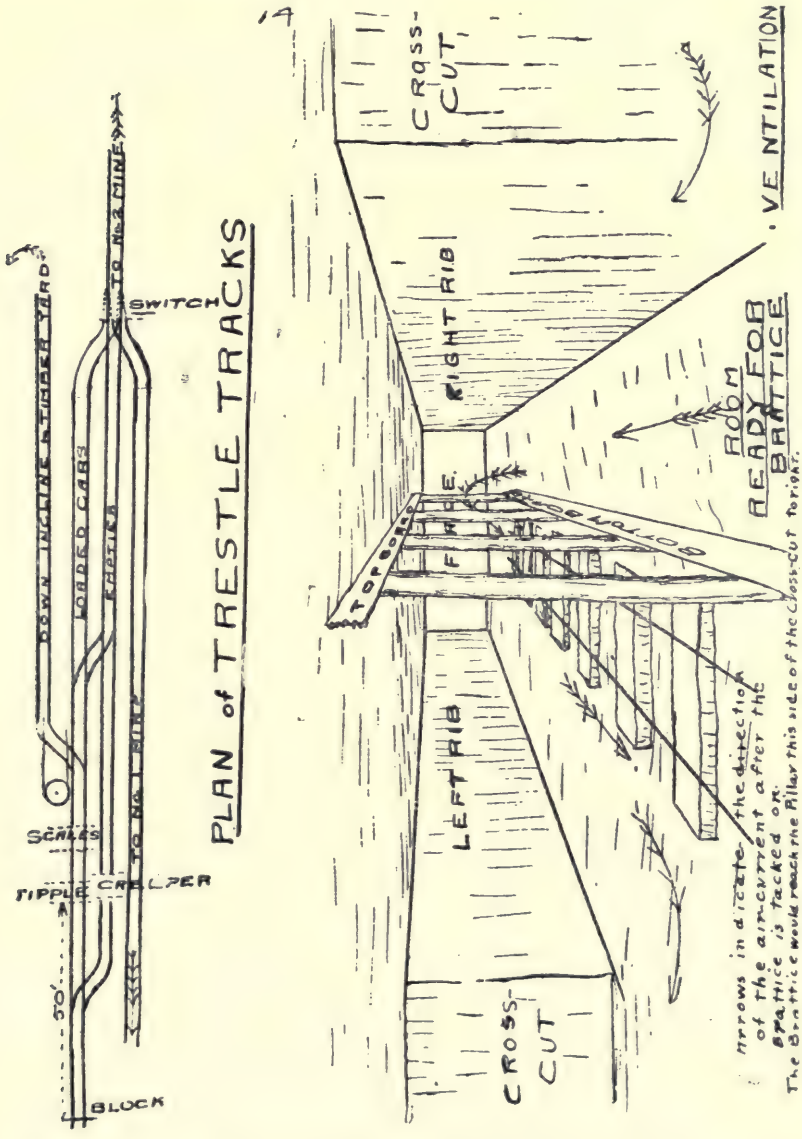
"The Manitoba Legislature has effected an arrangement by which this coal is to be supplied at a rate not to exceed 2 dols. 50 cents to 5 dols. per ton, according to locality. With the extraordinary transportation facilities possessed here, controlled and regulated as far as possible by the Legislature, and with enormous deposits of excellent coal, easily and inexpensively available, Manitoba enjoys most exceptional advantages, assuring an ample and cheap supply to all her inhabitants."

Assuming the accuracy of this estimate of the coal areas in this region, they would appear to be more than five times the coal area of the United Kingdom as a whole.

The Pacific Coast.

The principal ascertained coal areas of the Pacific Coast are as follows :—

	Area in Square Miles.
Nanaimo Coal Basin	200
Comox Coal Basin	700
Queen Charlotte's Island	800
Tertiary lignite-bearing rocks in various parts of British Columbia	12,000



METHOD OF WORKING AT COAL CREEK COLLIERY OF THE CROW'S NEST PASS COAL COMPANY.

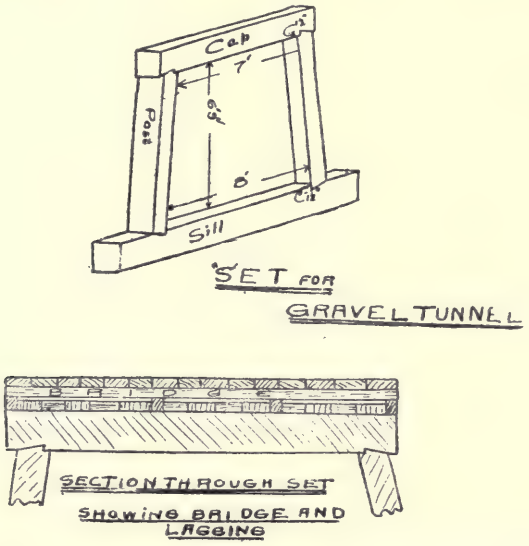
These figures are only presented as very rough approximations to the facts of the case.

The coal of Vancouver Island is bituminous in character and

cretaceous in origin. The coal measures lie in a narrow synclinal extending along the east coast of the island from Cape Mudge to within 15 miles of Victoria. They are bounded on the west by a range of mountains of the Vancouver crystalline series; to the east they dip under the waters of the Gulf of Georgia, reappearing on some of the islands of the Gulf. This cretaceous trough is divided into two areas, separated by a line of crystalline rocks situated near Nanaimo Harbour. The one to the north-west is known as the Comox area; that to the south-east, as the Nanaimo area. Both contain important collieries.

A large patch of cretaceous also occurs at Fort Rupert, north-east of Vancouver Island, and continues westward to Quatsino Sound.

Coal at Beaver Harbour and at Suquash Creek, near Fort Rupert, was made known by Dr. W. F. Tolmie, in 1835. In 1849 the Hudson



TIMBERING AT COAL CREEK COLLIERY OF THE CROW'S NEST PASS COAL COMPANY.

Bay Company brought out some miners from Scotland—among them Robert Dunsmuir, the future coal king of Vancouver Island. Exploratory work was done between Fort McNeil and Beaver Harbour. At Suquash Creek they bored 150 ft. and cut through a coal seam 5 ft. thick. In 1851 they began sinking a shaft, and had got down about 25 ft. when orders were received from Governor Douglass that all mine hands should go at once to Nanaimo, the existence of coal there having been disclosed by the Indians the year previous, viz., 1850.

Work at Nanaimo began in earnest in 1852. Before the close of 1853, 2,000 tons of coal are reported to have been shipped to San Francisco, the price at Nanaimo being 11 dols. and at San Francisco, 28 dols.

The mine was worked by the Hudson Bay Company under the name of the Nanaimo Coal Company until 1861, when it was sold to the New Vancouver Coal Mining and Land Company, Limited, an English joint

stock company with headquarters in London. In 1901 the Nanaimo Collieries were sold to Americans, by whom they are now carried on.

The principal collieries on Vancouver Island are the following :—

1. Nanaimo Colliery, owned by the New Vancouver Coal Mining and Land Company, Limited.
2. Wellington Colliery, owned by Messrs. R. Dunsmuir & Sons.
3. Union Colliery, owned by the Union Colliery Company of British Columbia, Limited (Dunsmuir).

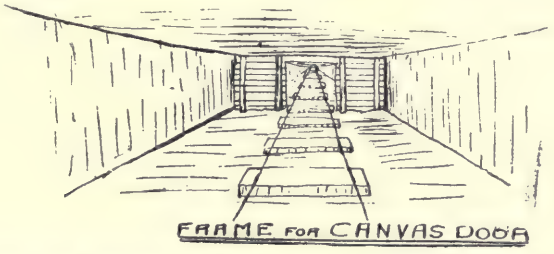
Some work is also being done at Quatsino by the West Vancouver Island Commercial Company.

The Crow's Nest Pass Coalfields.

In the Crow's Nest Pass region there are three series of seams, namely :—

1. The Elk River basin, bituminous, 12 seams.
2. Michel Creek basin, bituminous, 7 seams.
3. Michel Creek, cannel coal, 15 seams.

So far, mining operations have been limited to the Elk River basin seams, which outcrop along the mountains, on the east side of Elk



Method of Working at Coal Creek Colliery of the Crow's Nest Pass Coal Company.

River, from Morrissey Creek to above Coal Creek, at a height of 2,000 to 2,500 ft. above the river valley. The total thickness of coal in 900 ft. of vertical coal measures is computed at 147 ft. It has been computed that the Elk River basin alone has an available tonnage in twelve seams of 16,444,000,000 tons.*

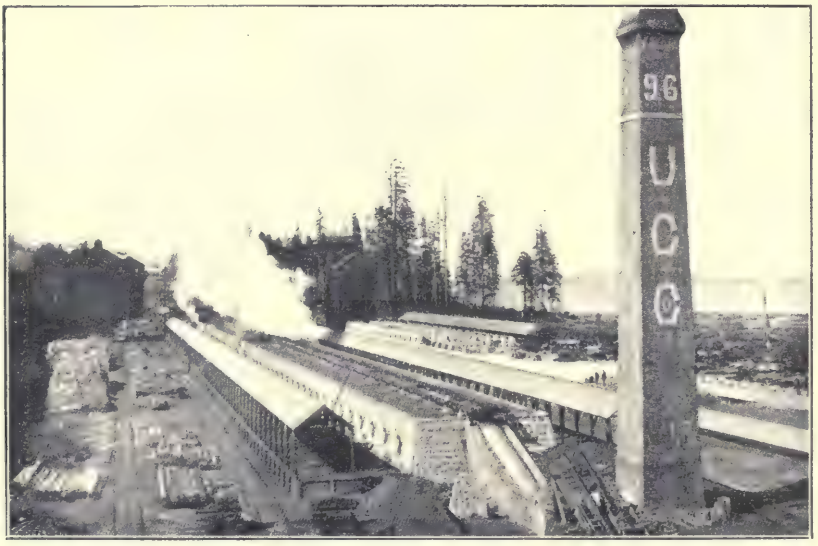
The Crow's Nest Coal Company's property, with an authorised capital of 4,500,000 dols., embraces over 11,000 acres of coal lands situated near Martin Creek, Coal Creek, and Morrissey Creek. On the eastern part of the property, near Marten Creek, there are 15 seams of coal, four of which are cannel or gas. Twelve miles further west, there are 12 superimposed seams of coal outcropping from the mountain slopes, varying from 2 ft. to 30 ft. in thickness. The pillar-and-stall method of working is practised.

Besides the various coalfields already named, anthracite coal has been found on Queen Charlotte Islands, and on other islands off the coast, as well as on Vancouver Island, near Comox.

* Report by Minister of Mines in *Year Book of British Columbia for* 1903, p. 190.

The Principal Coking Plants of Canada.

The largest plant of coke ovens in the Dominion, and probably the largest on the American continent, is the 400 Otto-Hoffman retort ovens at the works of the Dominion Iron and Steel Company at Sydney. This plant is a pioneer in Canada, and has some features that would entitle it to a detailed description did space permit. I must, however, refer those who desire full particulars to an interesting paper read by Mr. C. G. Atwater—who kindly showed me over the plant, and gave me details of its working—at the New Haven meeting, in October, 1902, of the American Institute of Mining Engineers, as well as to a short paper on "By-Product Oven Gas and Tar as Fuels for the Open-Hearth Furnace," by Mr. David Baker (the manager of the Dominion Works at



Coke Oven Plant at Comox, British Columbia.

Sydney when I was there), in the first issue of the *Iron and Steel Metallurgist.*

This recent paper by Mr. Baker describes the result of experiments with coke oven gas as a fuel for the open-hearth plant of the Dominion Iron and Steel Company. The trials showed that the steel-melting furnaces could not be worked commercially with that fuel alone. It happened that there was at that time over 1,000,000 gallons of tar stored on the plant, and it was decided to burn this tar as an auxiliary to the coke oven gas. The result showed that the use of the two forms of fuel led to 39·4 per cent. less sulphur being introduced into the process than when producer gas was used alone, the sulphur being also very easily controlled.

The Bauer oven is employed by the Nova Scotia Iron Company, whose coking plant consists of 30 ovens, 40 ft. long by 7 ft. high, with

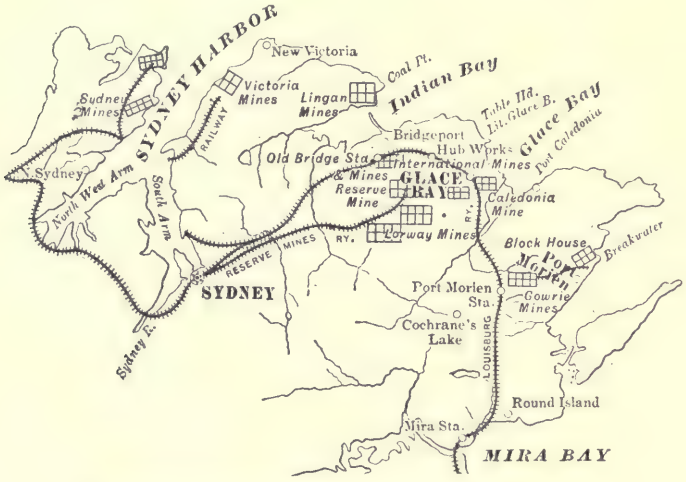
MAP OF PART OF BRITISH COLUMBIA, SHOWING LOCATION OF COLLIERIES AT NANAIMO, WELLINGTON, DUNSMUIR, ETC., IN RELATION TO VANCOUVER AND VICTORIA.

an average width of 20½ in., having a capacity of 12 to 14 tons pressed coal per oven, or about 375 tons of coal per day, and from 250 to 275 tons of coke when working on the 24-hour system.

The ovens work independently of each other, and 24-hour coke can be made in one oven, while 48-hour, if necessary, is made in another. Not only do the ovens work independently of each other, but the coke burner can readily diminish the heat at one point of the oven, and intensify it at another.

The oven is also so arranged that the by-product equipment can be attached at any time to any individual oven, or to the whole battery as desired, should the management consider its adoption to be of any special advantage.

The coal stamping process is used. The coal from the filled hopper is received into the coal stamp, a specially constructed machine which



SKETCH MAP OF SYDNEY COALFIELD, NOVA SCOTIA.

prepares the coal ready for coking, thereby doing away with all top filling and hand levelling, as commonly used. After the coal is pressed into shape it is pushed into the oven ready to be coked. This was the first plant of this kind built in America. Recent tests in Europe, where the stamping process has been successfully introduced, are said to show a saving of 220 lb. of coke per ton of pig-iron, by using stamped process coke in the blast furnace, attributed to more uniformity and greater strength and density of the coke.

ROCKY MOUNTAIN COKING PLANTS.

At the collieries belonging to the Crow's Nest Coal Company, which I had the opportunity of visiting, located in one of the most romantic spots in the Rocky Mountains, there are over 700 coke ovens in operation, of the ordinary bee-hive system, 12 ft. diameter, and placed in double rows. The average charge of coal is 6½ metric tons, and the production

of coke per charge averages 4½ tons, the percentage of coke being 68 per cent., the time of burning 72 hours, and the average output per oven per day, 1½ tons. The coke oven plants now in operation, or being completed in this region, are :—

	Ovens.
At Fernie	400
,, Michel	300
,, Morrissey	100

These three centres are all within a few miles of each other.

The illustrations which accompany this chapter are as follow :—

THE ALBERTA COALFIELDS.

1. Lethbridge Colliery, Alberta Railway and Coal Company.—Inclined railway from top of bank head.
2. The same.—Shaft No. 1, with coal trestle in the distance from bank head.

THE NOVA SCOTIAN COALFIELDS.

1. Dominion No. 2 Colliery, Glace Bay, Cape Breton.
2. Sketch Map of Sydney coalfield.

THE VANCOUVER ISLAND COALFIELDS.

1. Map showing location of Nanaimo and other coal mines.
2. No. 1 Shaft, Esplanade, Nanaimo.
3. Protection Point, Nanaimo, showing coal-shipping wharves.
4. Another view of coal-shipping wharf at Nanaimo.
5. Coke-oven plant at Comox.

CROW'S NEST PASS COALFIELDS, ROCKY MOUNTAINS.

1. Method of working coal, Creek Colliery.
2. Another diagram illustrating the same.
3. Another.

CHAPTER XII.

The Iron Ore Resources of the Dominion.

General Conditions.

The iron ores of the Dominion are unquestionably of great extent, value, and importance, but just how much so, no one at present is exactly in a position to say, because the amount of exploration that has hitherto been undertaken has been comparatively limited. The principal ascertained ore fields that have been brought to my notice are:—

1. The iron ores of Nova Scotia, which are found in workable amounts in most of the counties of that Province.
2. The magnetic iron-sands of the north shore of the St. Lawrence in the Province of Quebec.
3. The Lake Superior ores in the Michipicoton mining division of Ontario.
4. The iron ores of the coast of British Columbia, including those of Vancouver Island.

It is a striking commentary on the existing state of knowledge of the iron ores of the Dominion, or on their extent and character, that the greater part of the iron ore now consumed in the Dominion is not local at all, but is imported from the neighbouring territory of Newfoundland. These ores feed the furnaces of the Dominion Iron and Steel Company at Sydney, and those of the Nova Scotia Iron and Steel Company at New Glasgow and North Sydney, which unitedly make more than one half of the total output of pig-iron in the Dominion.

The greatest output of iron ore in the Dominion in any one year up to 1901 was 313,646 tons. In 1897, the output was only about 50,000 tons. Four-fifths of the total in 1901 was produced in Ontario, mainly in the Lake Superior region. In 1897, the chief producers were Nova Scotia and Quebec.

The iron ore mining industry took a considerable leap in the year 1902, when 527,310 tons were exported. In 1894, the total iron ore exports were only 1,859 tons. In no year previous to 1902 did the iron ore exports reach 60,000 tons. The bulk of the ores were exported to the United States.

The people of Canada complain that the position of iron ore in relation to the tariff arrangements between Canada and the United States is very unsatisfactory, and bears heavily against the development of Canadian iron mines. American ore is admitted into Canada free of duty, while a tax of 40 cents per ton meets Canadian or other foreign iron ores going into the United States. Hitherto a large part of the ore

smelted at Canadian blast furnaces has been imported from the United States. The deposits on the Vermilion, Mesabi, and other ranges south of Lake Superior in the United States, are easily worked, of superior quality, conveniently situated for transportation purposes, and the methods of mining and conveying them to the furnaces are well organised and systematised. Lake Superior ores can be delivered, say, at Ontario Lake ports almost as cheaply as at Cleveland or Buffalo. The iron mines in eastern or western Ontario cannot easily make headway against them. It is argued that things would be different if the Canadian demand was greater, but as yet it is insufficient to maintain even one large mine turning out ore upon a scale equal to that common in Minnesota or Michigan. The expenditure for railways, docks

HELEN IRON MINE, ONTARIO, DINING HALL AND SLEEPING CAMPS.

ore pockets, etc., to say nothing of the cost of opening up the ore body itself, is very large in the case of a great iron mine, and with the home market open to American ore, and that of the United States closed, or open only on paying a fine of 40 cents per ton, the owners of Canadian mines are handicapped. It is possible, as has been proved by the exports of ore from the Helen mine, to send iron ore from Ontario to the States, but the profits must be small, since the price realised must be less than that current for American ore by nearly the full amount of the duty. In eastern Ontario the iron mines, which are comparatively small, are handicapped by freight rates to lake ports and smelters, and are unable to supply furnaces with ore at prices equal to those for which Lake Superior ores can be laid down. Things would be different if there was reciprocity of tariffs with the United States.

On the other hand, there is practically a Government bounty on the

mining of Canadian iron ores. In Ontario, the bounty on iron ore mined and smelted paid by the Government of that Province, is based on the pig-iron product of the ore, and is limited to 25,000 dols. per annum. The sum payable per ton of ore is variable, being for each of the last two years about 25 cents per ton. This is the only share the producer of iron ore has in the whole scheme of Government encouragement, Provincial and Dominion, and it is claimed that it has not proved sufficient to counteract the effect of free entry of American ore. The ore bounty goes mainly to the furnace companies, who oblige the mine-owner to assign his claim thereto before buying his ore.

From the Laurentian days down to the present moment, processes of concentration, both chemical and mechanical, have been in operation, often resulting in the formation of beds and veins of ore. The processes have, doubtless, to a certain extent differed in kind, and have operated under more or less favourable conditions, and the ores, subsequently to their deposition, have frequently been subjected to agencies depriving them of their original characters, so that it is not surprising to find them differing widely in chemical composition and physical characters. They may, however, in Canada be classified as follows :—

I.—Anhydrous Oxides.

1. Magnetic iron ore or magnetite.
2. Hematite, including crystalline and earthy varieties.
3. Titanic iron ore.

II.—Hydrous Oxides.

1. Limonite or brown hematite.
2. Bog ore.

III.—Carbonates.

1. Spathic ore,
2. Clay iron-stone.

The most important deposits of magnetic iron ore occur in rocks of Laurentian and Huronian age, but it is also found in rocks which have been referred to the Lower and Upper Silurian, as well as in the Devonian and the Trias. The iron-sands of the Gulf of St. Lawrence, moreover, give examples of deposits of more recent date.

Geologically, the Canadian hematites are found in the Laurentian, Huronian, Lower Silurian, Upper Silurian, Devonian, Carboniferous, and Trias. Red ochres of modern age are also occasionally met with. In the Laurentian, hematite is less common than magnetite, and more frequently occurs in the form of red hematite than in the more highly crystalline varieties. Hematite ore occurs in both beds and veins, the beds generally, though not always, being the most important deposits. Like magnetite, it is not found solely in any one kind of rock, but often in rocks of most diverse characters.

The Ores of Nova Scotia.

In Pictou County specular ore has been discovered in a number of localities, but the only one which has been shown to be of much economic importance is that a short distance west of the east branch of the East River (area 100 of the Government plan).

Titanic iron ore or ilmenite is chiefly found in rocks of Laurentian age, more especially in the Upper Laurentian, and often forms deposits of considerable magnitude. Some of the ores of Brome and Sutton, in rocks of the Quebec group, also belong to this category, as they have been found to contain from 20 to 30 per cent. of titanic acid. In some instances the titanic acid found in the analysis of magnetic ores appears to be present as one of the constituents of the magnetite, but in other cases it is due to the presence of ilmenite mechanically mingled with the magnetite. The largest deposit of ilmenite known in Canada is that of Bay St. Paul.

Limonite usually occurs in veins, being the result of the alteration, generally *in situ*, of other ores of iron or of such minerals as ankerite;

PARTIAL VIEW OF THE HELEN MINE, ONTARIO.

if they contain organic matter at all, it is, so far as known, in very small quantity. No important deposits of limonite are known to occur in Canada in rocks older than the Middle or Upper Silurian, or newer than the Lower Carboniferous. Those occurring in these rocks are chiefly in the Province of Nova Scotia.

In Nova Scotia there are various deposits of hematite ore worked and unworked, but none of much importance. In one case the Antigonish Company are stated to own property near Dumpoint in Antigonish County, with thirteen beds of hematite ore opened upon six square miles, running from 3 to 20 feet thick, or a combined thickness of 80 to 90 feet of ore. The zone of ore beds extends for a number of miles. The ore assays 40 to 53 per cent. of iron. In Annapolis County several deposits of iron ore, mostly red hematite, are now being prospected.

Other mines include the Torbrook, in Annapolis County (red hematite), which is now being worked for the supply of the Londonderry furnaces, the ore averaging about 55 per cent. iron; the Bridgeville Mine (limonite), in Pictou County, which yields a 40 per cent. ore, some of which has been shipped to the Nova Scotia Steel Company's works at 3 dols. per ton; the Upper Kemptown Mine, in Columbia County, where five or six beds are reported, one of them stated at 13 feet thick; Skye Mountain Mines, in Inverness County, with magnetites assaying 49 to 63 per cent. iron; the Barachois Mountain deposits, owned and prospected by a Roman Catholic priest,* where the magnetite ore is stated to average about 60 per cent. of iron; and the Canfield

WALBRIDGE IRON MINE (MADOC) ONTARIO.

Mines, in Cumberland County, where the Dominion Steel Company has been working limonite ore.

The principal localities in Nova Scotia known publicly to contain specially large deposits of ore are Nictaux in Annapolis County, and the East River district of Pictou County. Other localities less known are Whycocomagh, George's River and Mira in the Island of Cape Breton, Guysboro' Arisaig, the Cobequid Mountains, Stewiacke and Clementsport in Nova Scotia proper.

In the East River district of Pictou, there are spread over many square miles of territory, specular, red hematite, limonite, and spathic

* This gentleman looked me up when I visited North Sydney in October, 1903, and showed me a number of specimens of his ore, which looked excellent; but others informed me that it occurs in pockets which are precarious and uncertain.

ores in deposits from four to forty feet in thickness, and varying in quality from a grade similar to that of the Newfoundland ore to one much higher. These ores require a rail carriage to Pictou Harbour of about nineteen miles, or would by the extension of the Sunnybrae Railway to Country Harbour find, with a haulage of thirty-five miles, an outlet on the Atlantic. It is, however, believed that as the mining of this ore would be more expensive than that of the Belle Island ore in Newfoundland, this district could not at present compete at Sydney.

At Nictaux and Torbrook in Annapolis County, the presence of large quantities of magnetite and specular ore has long been known and recent investigations have largely extended the limits of this field,

Bristol Iron Mine, Labelle, Quebec.

A haul of thirty-five miles on the Dominion Atlantic Railway places this ore on tide-water at Annapolis. Much of the ore of this district is similar in character to that mined in Newfoundland, and occurs in deposits which can be cheaply worked.

The *Canadian Mining Journal* states that the vicinity of the Pictou ores to the coalfields of that county, and of the Nictaux ores to the Cumberland coalfields, warrants the belief that at both these points furnaces could produce pig-iron at profitable rates. These rates of profit, while presumably not so large as those anticipated at Sydney, would in the opinion of competent authorities amply repay the investment of capital. In addition they could furnish very large quantities for export.

Mr. Edwin Gilpin, the Deputy Commissioner for Public Works and Mines in Nova Scotia, has the following remarks on the iron ores of the Province :—

"Ores of iron are known in workable amounts in nearly every county in Nova Scotia. At present mining operations are confined to the property of the Nova Scotia Steel and Coal Company, Bridgeville, Pictou County ; the property of the Londonderry Iron Company, Colchester County ; and the Torbrook Mine, Annapolis County.

"The deposits in the districts of Torbrook and Nictaux, Londonderry and Bridgeville, are very large, and in many cases of excellent quality. Deposits are also known at Pugwash, Clementsport, Clifton, Goshen, Newton Mills, Selma, Brookfield, Arisaig, Salmon River, Mira, East Bay, George River, etc., etc.

"Every variety and quality of ore is met : magnetite, red hematite, brown hematite, etc."

The principal iron ore deposits hitherto worked in Nova Scotia—those of the Londonderry Iron and Mining Company at Londonderry, Colchester County—assay in metal as under :—

	Per cent.		Per cent.
Hematite, specular ore ...	67	Old Mountain brown hematite	50
Limonite	50	Siderite, East Mines spathic ore	30
Limonite, "bottle ore" ...	48	Ankerite	12

These ores occur in slates and quartzites on the southern slope of the Cobequid Hills. They have an approximate east and west course, and have been traced for more than twelve miles. The width is sometimes two hundred feet, and ore bodies of fifty feet have been found.

In Cumberland and Colchester Counties, the Cobequid Mountains, which contain these important bodies of limonite and carbonate ores, continue to the eastward into Pictou County, and here the deposits consist of limonite and specular ores. In addition, the Clinton shales contain numerous beds of red hematite, some of which are said to be fifty feet in thickness. There are also important deposits of limonite and spathic ores in lower carboniferous strata. The iron of these ores runs from 35 to nearly 70 per cent., some of the ores ranking as good Bessemer, while all are said to be "good furnace ores." The ores are in close proximity to coal and fluxes. The continuation of this ferriferous range reaches the Gulf of St. Lawrence, at Arisaig. At Whycocomagh, in Laurentian strata, the red hematite deposits generally contain large amounts of ore. Promising deposits are known at East Bay and George's River. Loch Lomond, Big Pond, Smith's Brook, Lake Ainslie, and Lewis Mountain, may also be mentioned as yielding iron ores.

It is the opinion of some authorities that the iron ore resources of Nova Scotia have been overrated, and that they cannot, in any case, compare with those of Newfoundland and Lake Superior, in respect of cheap working. This is more than probable, seeing that deep mining is necessary in the one case and mainly quarrying in the others ; but it has recently been argued that if export duties are imposed on exported ores by Cuba and Newfoundland—as appears not improbable—the ores of Nova Scotia would come into greater prominence, both for local use and for export.

The following are other analyses of some of the ores of Nova Scotia :—

	Londonderry.	Torbrook.	East River. Limonite.	Cape Breton. Whycocomagh.
Metallic iron	57·85	55·60	56·83	60·90
Silica	4·79	12	4·80	10·80
Phosphorus	·09	·43	·07	trace.
Sulphur	·60	·11	trace.	trace.
Alumina	·56	5·08	—	1·40
Magnesia	·10	·35	—	1·64
Lime	·15	1·90	·63	1·85
Manganese	·25	·38	·20	—
Water	10·71	—	—	—
	Gilpin.	Smaill.	Gilpin.	Gilpin.

In considering the future of Nova Scotia as an iron-producing centre, it is important to remember that the Province is not necessarily

ANOTHER VIEW OF THE BRISTOL IRON MINE, LABELLE, QUEBEC.

dependent on either the local ores or the ores of Newfoundland. It is stated that the Lake Superior ores can be introduced for less than a dollar a ton freight, "coming the whole way by water."* This appears to me to be doubtful. No Lake Superior ores that I know of can be carried the whole way by water, since none of the great Lake Superior mines entirely avoid a railway journey. From the mines to the Lake involves a railway haul varying from 25 to over 100 miles, which has

* Paper read by Mr. Steven Barrie, in 1901, before the West of Scotland Iron and Steel Institute.

to be added to the lake freight, but with low railway rates the cost need not be greatly increased thereby.

The late Sir William Dawson, in 1875, in writing on the subject of "The Iron and Coal of Nova Scotia, a Source of Wealth to the Dominion," says:—"It is a remark often made that the iron ores of Canada, rich and magnificent though they are, suffer in their practical value on account of their distance from the mineral fuel required, in so great a quantity, whenever smelting processes are undertaken on a large scale. To a certain extent, better means of communication and larger and more economical working must remove this disadvantage. It should, however, be borne in mind that the great iron deposits of Nova Scotia, equal in extent and value to any others in the Dominion, are not so situated, but lie in close proximity to some of the greatest coal-fields in the world. We need only glance at the Report of the Geological Survey of Canada for 1873–4, of which more than a hundred pages are occupied with these great and important deposits, to see that this is the fact. Even in Great Britain itself, their two great staples of mineral wealth are not in more enviable contiguity, and the iron ores of Great Britain are in general neither so rich nor so accessible as those of Nova Scotia. This is more especially the case with the magnificent deposits of the Acadia Mines in the Cobequid, and with the still more extensive beds and veins of Pictou."

The Ores of Quebec.

The Province of Quebec does not appear to be so rich as its neighbours in minerals generally, and its iron ore resources are no exception to this rule. The only two sources of supply of which I have been able to hear are those of Moisic and of Natashquair—the former an iron-sand, which Professor Stillman (of the Stevens' Institute of Technology, New York) found to assay 70·01 per cent. of metallic iron, and 0·03 per cent. of phosphorus; while the latter is an equally rich ore, assaying about ·043 per cent. of phosphorus and ·22 to ·68 per cent. of silica. As to the extent of the deposits or the cost and conditions of mining, I have obtained no reliable data.

Magnetic iron-sands forty years ago claimed the attention of business men as being a source of iron ore of high quality. In 1867, a company called the "Moisic Iron Company" was organised in Montreal to work them. This company bought large tracks of land in the vicinity of Moisic, built on the spot eight bloomary furnaces, using the magnetic sand as ore and charcoal as fuel. The product of these furnaces was sent to the United States, or used in Montreal at a rolling mill controlled by the company.

In March, 1875, under the protest of the American iron workers, this iron was declared subject to the duty on bar iron, equalling 34·80 per cent. *ad val.*, which compelled the company to shut down the works, and to go into liquidation. At that time there was not available a sufficient Canadian market. Dr. Sterry Hunt, when he visited Moisic, found four of these furnaces yielding three tons of iron per 24 hours with 12 men, using 1,400 bushels of charcoal.

Although the iron industry in Quebec is one of the oldest-established in North America, there are only two small furnaces using bog-

ore, and they produce the highest quality of charcoal pig-iron. Several other attempts were made thirty or forty years ago to smelt the magnetic ore found in the vicinity of Ottawa, the magnetic sand of Moisic, and the titanic ore of St. Urbain, but without financial success. Several deposits of magnetite and hematite are found throughout the Province, but the most important, besides the magnetic sand deposits of Moisic, are St. John and Natashquair, on the northern shore of the Gulf. It is estimated that many million tons of ore, with a high percentage of iron, practically free from phosphorus and sulphur, could be obtained by proper concentration, so as to get rid of the titanium which is found as titanic

SARITA MAGNETITE MINES, BARKLEY SOUND, B.C.

iron with the Moisic sand, and several machines have been introduced for this purpose.

THE IRON ORES OF ONTARIO.

It is said to be doubtful whether in any part of America so great an extent exists of rocks favourable for the occurrence of ore deposits as in Ontario. Already a number of mines have been located, both of hematite and magnetite, and it need not be surprising if within the next five or six years mines are developed in northern and north-western Ontario on a material scale.

Ontario—at any rate, older Ontario—is without coal mines, but coke and coal can be brought from Pennsylvania at very little greater cost to Canadian ports on the great lakes than to American ports.

The recent history of iron mining in Ontario really dates from the discovery and opening of the Helen Mine in the Michipicoton mining

division. The first ore was shipped from here in 1900. Previous to the inauguration of a blast furnace at Hamilton in 1896, no pig-iron had been made in Ontario for many years, and, consequently, there was no home demand for iron ore. A generation ago a considerable business was done in the mining of ore, chiefly magnetite, in eastern Ontario, and exporting it to the United States. During the twenty years from 1869 to 1888 a total of 524,511 tons of iron ore, valued at 1,314,357 dols., was so exported, but the then American duty of 75 cents per ton largely put a stop to the trade, the exports falling in 1894 to 618 tons, and ceasing altogether the next year. From 1888 to 1896 inclusive only 58,031 tons of iron ore were mined and exported, but in the latter year the revival of the smelting industry brought about the resumption of mining, and in the four years from 1896 to 1899 inclusive, the product of Ontario mines amounted to 62,351 tons. In 1900 the Helen Mine began producing ore, and for the three years 1900 to 1902 inclusive, the total yield of ore was 723,128 tons, of which by far the larger proportion was Helen ore.

In 1902, the total quantity of ore raised in Ontario was 359,288 tons. The average output of ore per worker employed was 980 tons for the year; the average wages paid per ton produced was 2s. 6d., and the estimated average value of the ore at the mine was 5s. 10d. per ton.

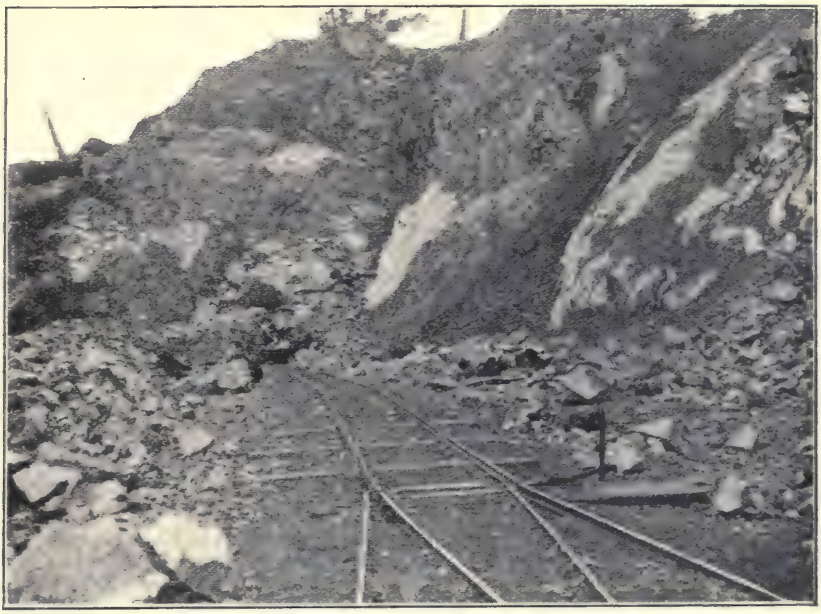
Four mines in eastern Ontario produced, in 1902, 23,057 tons of ore, some of which went to furnaces in Ontario and some to furnaces in Quebec. One of these was the Radnor Mine, owned by the Canada Iron Furnace Company, and recently opened in the township of Grattan, Renfrew County. The ore is magnetite of fair quality, and the indications seem to promise a large deposit. So far the product has been taken to the company's smelters at Radnor Forges, Quebec. Besides the Helen and Radnor Mines, three other iron-mining properties were worked during the year, all in the county of Hastings.

Some disappointment has been expressed that up to the present comparatively few deposits of workable ore have been found in the iron ranges of northern and north-western Ontario, the ascertained extent of which is very great. Experience on the analogous ranges south of Lake Superior has, however, proved that large surface outcroppings of ore will be of infrequent occurrence, and that for the most part prospecting must be carried on by the diamond drill. The iron formations in the Michipicoton region have, perhaps, been more carefully and systematically explored than in any other district, and several bodies of hematite, in addition to the Helen Mine, have been located, notably those at the Josephine location and Brant Lake. American capitalists have for considerably over a year been prospecting for iron ore on the shores of Steep Rock Lake on the line of the Canadian Northern, where numerous boulders of first-rate hematite occur, and borings have given encouraging indications.

The discovery of iron ores on the Canadian side of Lake Superior has stimulated operations on a considerable scale, which are now in progress. On the Antikokan and Steep Rock Lake ranges diamond drills are at work, and hematite ore has been found; and the last Annual Report of the Port Arthur Board of Trade indicated that next year

would probably see the construction of iron docks at Port Arthur, not only to handle the hematite ores of the Steep Rock Lake range, but also to facilitate the shipping of the magnetite ores of the Antikokan range. Diamond drilling is also being done on the Duluth branch of the Canadian Northern by Americans, while on Hunter's Island considerable prospecting has been done. This tract joins the celebrated Vermilion range in Minnesota. Some authorities are said to speak highly of the Hunter's Island range.

On the Black Sturgeon River, near Lake Nepigon, hematite ore has recently been discovered, and considerable areas are being surveyed at the present time. The ore from this district will be tributary to the



TEXADA MINE, B.C.—SHOWING CONTACT OF MAGNETITE WITH LIME.

St. Joe Railway. Other discoveries of iron have been made on the north shore of Lake Superior within the past year.

Varying statements have been made as to the value of the Michipicoton ores. The Canadian correspondent of the *Iron Age*, writing in March, 1901, described the Helen Mine as "a deposit ranking in importance with the great mines of Michigan and Minnesota." On the other hand, others have described the deposit as one of inferior extent and value. The chances are that there may be found extensions of the range in the same region, having regard to the indications all round the locality.

The Helen Mine has an ore body not less than 200 ft. in depth, 400 ft. in thickness, and 1,000 ft. in length. The ore assays about 56 per cent. iron, ·10 P.; and under 5 per cent. of moisture. In 1901, 400,000 tons of Helen Mine ore was sold for delivery at Midland,

Hamilton, and Lower Lake Erie ports. From a United States source I gather that the ore lies upon a footwall of banded magnetite carrying quite a percentage of iron, and with a hanging wall of carbonate of iron, or siderite, which assays from about 45 per cent. iron downwards. Across the lake there is quite a deposit of pyrites, and pyrrhotite and magnetites appear in the railway cuts. It is the intention of the management to drill through a capping of siderite that outcrops largely about a mile below the Helen Mine.

The Chief Inspector of Mines for Ontario has the following observations on the outlook of the ores of that Province * :—

"Of about 35,000,000 (long) tons of iron ore produced in the United States in 1902, some 27,500,000 tons came from the mines of the Lake Superior region—by far the largest quantity that has ever yet been raised there. Before these tremendous and increasing drafts, even the large reserves still extant will at no distant date disappear, and long before that period arrives the iron ores of Ontario will be in strong demand. It may well be doubted whether other iron ranges, equal say to the Mesabi in quality, as well as extent of ore bodies, are likely to be again discovered, and it appears certain that the iron smelters of the coming generation will have to be less fastidious as to the quality and richness of their ores than those of the present day. However this may be, the iron ranges of Ontario, provided the ore is there, are well fitted by their situation to take the place of the Minnesota and Michigan ranges in furnishing the necessary supplies for this essential industry. Tributary, practically all of them, to the great lakes, the same system of boat transportation and freights can be applied to transport on the north as on the south side of the line."

The Iron Ores of British Columbia.

The latest Annual Report of the Victoria (British Columbia) Board of Trade calls attention to the facilities afforded for the prosecution of the iron industry in the Province, and argues that there are better facilities for carrying on that industry, so far as the Pacific Coast is concerned, on the Canadian than on the United States side of the line, assuming that, as hitherto, British Columbian iron ore is used in both cases. The difference in favour of the Dominion is, of course, made up mainly by the two items of 2 dols. 70 cents per ton on pig-iron granted by the Dominion Government for the current year, and 80 cents duty on two tons of Canadian ore entering the United States at 40 cents per ton. There are, besides, the differences in freight, extra cost of handling, quality of coke, and proximity to supplies of raw material, all declared to be in favour of Canada.

Extensive iron ore deposits are known to exist on Vancouver Island. There is practically no demand for them at present. Iron ore has been located in large bodies in many places, and analyses show it to be of high grade. Samples of bog iron from Quansino Sound were reported by the Provincial Government assayers to contain 52 per cent. of iron. The principal samples examined at the same laboratory have been

* Report of the Mining Department for 1902.

magnetite, and many of these have been proved to contain a much higher percentage of iron. The deposits best known are located on the West Coast ,Barkley Sound, and at Sooke, still nearer Victoria. The fact that there are no similar deposits yet found on the North Pacific Coast south of the 49th degree of latitude, quantity and quality considered, is important. The necessary fluxes and fuel, like the iron ore, are all situated conveniently near navigable deep-sea water. Notwithstanding these natural advantages, the manufacture of iron on Vancouver Island does not appear to have received serious consideration.

40 FEET MAGNETITE DEPOSIT, BUGABOO CREEK, B.C.

The conditions for making iron, so far as fluxes, labour, and geographical position are concerned, are, however, said to be good.*

The value of the large iron deposits on the coast and islands of British Columbia is rapidly becoming better known and appreciated by the outside world.

Some samples of ore from a mine not far distant from Victoria were on view at the recent exhibition at that city. The property is said to contain a high grade deposit of ore. The mine—on which much work has been done—is situated on Bugaboo Creek, a tributary of the Gordon River, which empties into San Juan Harbour, in Renfrew district.

* Report of Victoria (British Columbia) Board of Trade for 1903.

Mr. I. B. Atkinson, in a recent report made on the property, said the ore is a contact vein or deposit of magnetic, and where it shows clearly in the creek it is 230 ft. in width and practically clean ore. Mr. Atkinson examined several large outcrops of ore, and practically proved a continuation of the ore body for nearly three miles. It is a contact deposit lying between a wide belt of highly crystalline limestone on the hanging wall side, and altered igneous rocks on the footwall. Samples of ore taken from the sides, roof, sole and forebreast of the tunnel, gave the following average assay :—

	Per cent.
Silica...	1·40
Sulphur	·30
Phosphorus	·06
Titanium	nil
Lime	trace
Alumina	trace
Water, very little chromium, and loss	1·14
Metallic iron	69·06

This ore is well situated for economical mining. San Juan Harbour is 60 miles from Victoria, and the mine is six miles from the harbour at an elevation of 1,600 ft. above sea level. The ore can be mined by quarrying.

Magnetic iron ore is found over a great part of the north end of Vancouver Island. Most of the Crown Land surveys carried out within the last 20 years bear testimony to this fact.

Most of the ores found on the coast of British Columbia are rich in iron. Fourteen assays made out of twenty-two showed more than 60 per cent. of metallic iron, and eight assays exceeded 65 per cent. Where phosphorus was determined, there was only one case in which it exceeded what is known as the Bessemer limit, and silica ranged from 2·7 per cent. to as much as 20·3 per cent. The table will be found in the Appendix.

Iron Ores of the Territories.

Geologists report that there are large deposits of iron ore on the projected route of the Grand Trunk Pacific at points east and west of Lake Abbittibbi, some 220 miles north of Winnipeg. There are also deposits of copper and nickel. Iron ore, not unlike that of Newfoundland, has been discovered in a group of islands in James Bay, and is being worked by Americans, who ship it out by Hudson's Strait. With the exception of scattered beds of lignite, however, there is no accessible coal in that northern region. The Grand Trunk Pacific, on entering the Rocky Mountains, will traverse a country rich in steam and coking coal, which extends almost the whole way to Port Simpson. But there does not appear to be iron there.

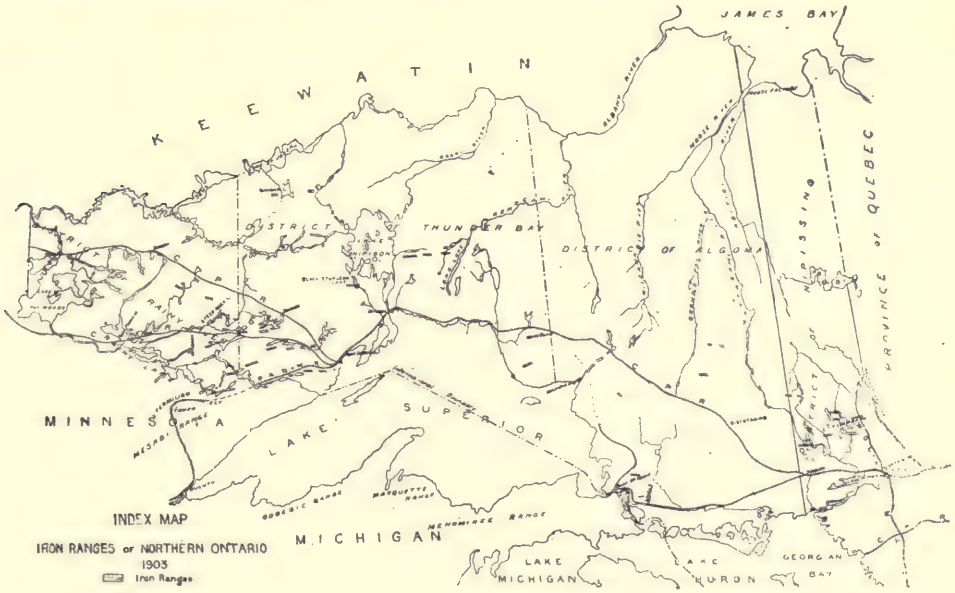
Newfoundland.

As this colony is the chief source of the supply of ores to existing Canadian iron works, reference may be made to its ore resources, although it is not yet a part of the Dominion.*

* When I was in Canada I was given to understand that the consummation was nearer now than it had ever been before.

Newfoundland is a colony which is rich in many different minerals. The existence of iron ore was known here early in the nineteenth century, and Auspach, the historian, makes mention of it as far back as 1818 The Belle Island iron ores were not worked until 1895, when the first cargo of 750 tons was shipped to the Ferrona Works at New Glasgow. The annual output now exceeds half a million tons a year. Iron ores are also found on the western half of the island. A recent writer says that "new finds of iron ore are constantly being made, yet, so far, none have developed into mines."

An important source of supply of this iron ore is Great Bell Island, in Conception Bay, on the east coast of Newfoundland, about twenty miles from St. Johns. It is a deposit of red hematite, easily worked, and close to deep water, so that the cost of mining and handling is small.



It is stated that the first 120,000 tons mined and delivered at furnaces cost only 1 dol. 62 cents per ton, in spite of the fact that it was unloaded by hand.

In 1895 the entire iron ore deposit on the Island of Wabana, in Conception Bay, was sold to the Nova Scotia Iron and Steel Company for £24,000, and this company in the next five years mined some 200,000 tons of the mineral, of which part was used in their own furnaces at Ferrona, and part was exported to Europe.

A Newfoundland Iron Ore Company was recently organised to acquire certain ore properties, consisting of fourteen claims on the west of Conception Bay, on the east coast of Newfoundland, and to carry on mining operations there. The engineer considered that the ore could be placed on board steamers at Old Pelican, a convenient shipping point on Trinity Bay, four miles away, at a cost of 4s. a ton, and that an expen-

diture of £35,000 on two shafts sunk 1,000 feet, on a wharf and a tramway, would enable the company to ship 2,000 tons a week. The certificate of Edward Riley showed that the ore examined contained over 61 per cent. of metallic iron, 0·011 per cent. of phosphorus, and a trace of sulphur.

Wabana Island, which is the chief centre of mining operations in Newfoundland, is eight miles long and two miles wide. On the north side, where the ore is found, shipping is exposed to northerly winds, which at times hamper and delay loading. On the south side facilities for shipping are excellent. The loading piers are on a harbour, well sheltered from the wind. The waters of the bay are deep and free from shoals. The bottom near the piers is of mud, and forms a good anchorage, and the bay is free from ice and navigable for nine months of the year. Ore has been shipped to Sydney until December, and steamers of 5,000 tons capacity can be loaded in about five hours. The cost of mining and loading the ore is stated to range from 50 cents to 1 dol. per ton. The ore has been transported from Wabana to Sydney at a cost of from 35 cents to 45 cents.

Exports and Outlook.

It is not a little remarkable that hitherto the great bulk of the iron ores raised in Canada has been exported, and not smelted within the Dominion. In 1902 the total quantity of iron ore produced in Canada was about 585,000 tons, of which 428,901 tons were exported. The total quantity of Canadian pig-iron produced in that year from home ores was only 71,665 tons, while 286,238 tons were produced from imported ores. This is mainly due to the fact that the furnaces of the Dominion Company, in Nova Scotia, smelt Newfoundland ores, which are treated as "foreign."

The present position of the iron trade of Canada and the plans that have been formulated and put into more or less successful operation for the extension of the pig-iron output of the Dominion, must before long call for a much larger consumption of iron ores than anything hitherto produced. Those plans provide for the working of 23 blast furnaces, with an estimated annual capacity of well over 1,000,000 tons. Of these 23 furnaces, 17 were built and six were building, at the time of my visit. The plants to which they belonged were almost entirely in Nova Scotia and Ontario.

CHAPTER XIII.

General View of the Canadian Iron Industry.

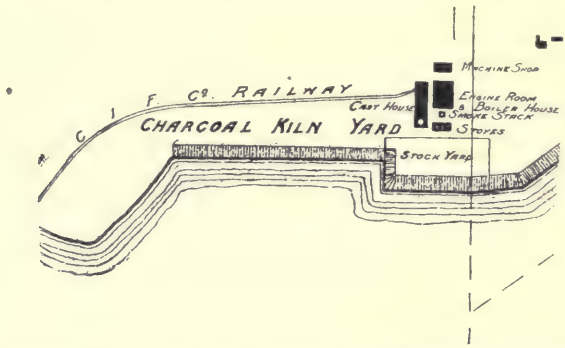
The pioneer stage of the Canadian iron industry dates back to the establishment of the St. Maurice forges by the French Government, about the year 1737. Work was carried on there for some years by the French, and after the Treaty of Paris by the British. After these early days came the erection of iron works at such places as Batsican, Baie St. Paul, and Hull, in the Province of Quebec; Furnace Falls, Normandale, and Marmora, in Ontario; Woodstock, in New Brunswick; and Moose River and Bloomfield, in Nova Scotia. Labouring under grave disadvantages, the pioneer furnacemen of the country were finally obliged to succumb to the competition of foreign iron, which in those days was admitted free of duty.

On the introduction of the protective tariff on iron in 1887 the industry, as it is to-day, began to have a being. Furnaces began springing up in various parts of the country, and the capacity of the united works reached a figure not dreamt of a few years before.

Most people, when they think of Canada, appear to entertain the view that it is a country of as limited manufacturing resources as it is of limited population, and that its manifest destiny is not that of a competitor with other countries in great industrial tournaments, but rather that of supplying agricultural products and timber to the other nations of the world. Something has been done of late years to overcome this prevalent impression. The Geological Survey of Canada has published much interesting information on its mineral resources. The Government, impressed with the exceptional variety and extent of the wealth of the Dominion in coal and iron, has arranged to encourage their development both by Customs' duties and by bounties. New and important iron and steel works have been founded at various suitable centres, more especially at North and South Sydney, in Cape Breton (Nova Scotia); at Hamilton, in Ontario; and at Soo St. Marie, also in Ontario, but on the borders of Michigan and Lake Superior. Altogether it is computed that more than forty million dollars have been invested in Canadian iron-works, steel-works, and iron mines. A beginning has been made with the exportation of both iron and steel to Europe, and in one year Canada achieved the distinction of exporting to the Mother Country a larger quantity of pig-iron than any other country except the United States and Sweden. The business is, in short, in a formative stage, which may at any time assume the ultimate form of a great industry.

Consumption and Capacity.

The total consumption of iron and steel in Canada at the present time is computed at between 800,000 and 850,000 tons. The greatest quantity of pig-iron produced up to the present time in any one year has been 319,557 tons, to which figure it advanced from only 53,796 tons in 1897. The total number of blast furnaces available in the Dominion is 14, of which, however, not more than one-half have ever been employed at any one time. The total capacity of these blast furnaces has been computed at about a million tons per annum, but while the blast furnaces may equal this output, as such, it is by no means certain that Canada could produce iron ore to meet such an output for a considerable time to come. The steel-manufacturing capacity of the Dominion is computed at some 700,000 to 800,000 tons, but I greatly doubt whether this figure could be realised in practice with the present plants. The new plants being built at North Sydney and elsewhere would, however, add fully 80,000



Plan of Works of the Canada Iron Furnace Company, Midland, Ontario.

tons to the existing capacity, whatever it may be. The greatest annual output of steel hitherto attained in any one year is not over 182,037 tons.

Speaking broadly, then, the situation is this, that while the Dominion has a present demand for between 800,000 and 900,000 tons, the actual output is not as yet much more than one-third of that figure. The remainder takes the form of imports from the United States and the United Kingdom in the proportions of about 70 per cent. from the former and only 30 per cent. from the latter.

Some Results of Canadian Enterprise.

Most of the recent attempts that have been made from time to time to produce iron and steel, or either of them, in the Dominion, have been signally disastrous, or at any rate a long remove from complete success. Few of these attempts have been on a considerable scale. Three only can at this moment be recalled. The first of these was the project initiated by the late Sir William Siemens in

1879, for the production of steel on the open-hearth in Nova Scotia. A plant of ten furnaces was built in the neighbourhood of Londonderry, designed to use the ore and coal found in that neighbourhood, and to manufacture steel that would not only meet the requirements of the Dominion itself, but provide a surplus for export to the United

THE CANADA IRON FURNACE COMPANY'S WORKS, MIDLAND, ONTARIO.

States and to other countries. At that date the Siemens or open-hearth process was in its infancy as a process. Indeed, the only large plants of the kind in the world in successful operation were those at Landore and at Glasgow. The open-hearth process, in short, was at the time practically on its trial. The Bessemer was the only process then accepted as generally suitable for production on a large

scale. The ambitious Londonderry Steel Company of that day came to an inglorious end, partly because of the then imperfect character of the process adopted, partly because there was no market for the large output which the works were designed to furnish, and partly because of defective organisation.

One of the next steel-manufacturing ventures on a large scale was that of the Dominion Company at Sydney. This enterprise was promoted by Mr. Whitney, of Boston. Here, again, there was a striking, and almost notorious, failure, due to over-capitalisation, to insufficient technical knowledge, to serious blunders as to the conditions and costs of production, and to extravagant outlay in every direction. A brief history of this enterprise is given in another chapter.*

A third large enterprise of its kind which has ended in failure was that promoted by Mr. F. H. Clergue at the Soo St. Marie on Lake Superior, in the Province of Ontario. Mr. Clergue was an attorney by profession, and there is no evidence extant that he knew anything of the iron and steel industries, although he had been associated with several other enterprises that had not been conspicuously successful. In this case the iron and steel works were only a part of a great scheme of industrial development which included mines, a power canal, a railway, pulp mills, an electric lighting plant, and other constituent elements. The iron ore supply was to be obtained from the Helen Mine, in the Michipicoton district, which, it was estimated, contained perhaps 100,000,000 tons. It has since been stated to contain much nearer a single million. There were two other deposits, undeveloped, from which there was some hope of getting Bessemer ore, but they have never been explored enough to determine their extent or their character. The steel plant at the Soo utilised machinery from Danville, Pa., where two 6-ton Bessemer converters were erected in 1888, but never operated until 1899, and then for only a few months. Four blast furnaces, two coke and two charcoal, were to be erected, but only two were brought quite to completion. Here, again, capital appears to have been spent prodigally, if not wastefully, until the company had to stop operations because their resources were completely exhausted.

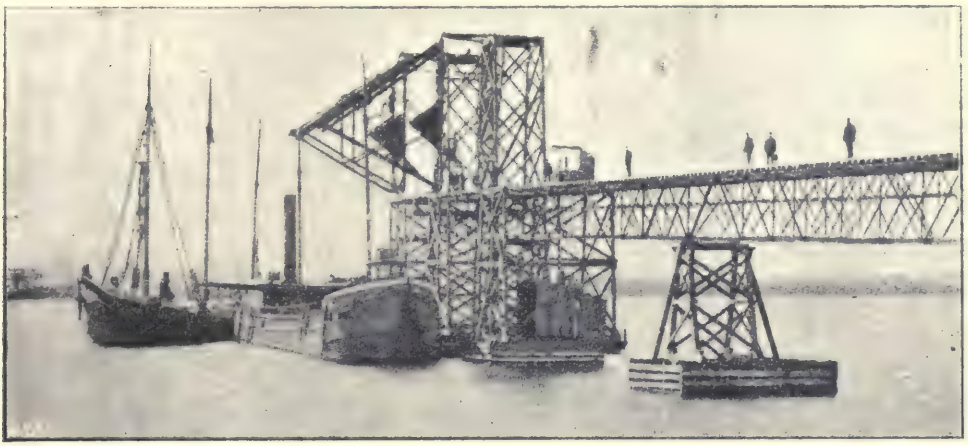
The large increase in the production of steel in Canada in 1902 over 1901 was caused by the starting of the new open-hearth steel plant of the Dominion Iron and Steel Company, Limited, at Sydney, Cape Breton, which first produced steel on December 31st, 1901, and of the new Bessemer plant of the Algoma Steel Company, Limited, at Sault Ste. Marie, Ontario, at which steel was first made on February 18th, 1902. The two 6-ton Bessemer converters of the latter company were operated for a few months in 1902, producing in all 45,537 long tons of ingots. The company has also a rail mill, which first made Bessemer steel rails on May 5th, 1902, and which ran for a few months in that year, producing 32,878 long tons. The Dominion Iron and Steel Company produced 99,425 long tons of basic open-hearth steel ingots and castings, and 86,424 tons of blooms, billets, and slabs. It did not make steel rails.

* *Vide* Chapter XIV.

The Algoma Steel Company, Limited, of Sault Ste. Marie, Ontario, which is one of the constituent companies of the Consolidated Lake Superior Company, commenced the erection of two charcoal and two coke furnaces at Sault Ste. Marie in 1901. The charcoal furnaces were to be 70 by 14 ft. and the coke furnaces 90 by 21 ft. Subsequently work on the coke furnaces was suspended, and one of the building charcoal furnaces was converted into a coke furnace, the size being changed from 70 by 14 ft. to 80 by 15½ ft.

The Cramp Steel Company, Limited, has put in the foundations for a coke blast furnace at Collingwood, Simcoe County, Ontario. The company expects to have the furnace ready for operation in 1904. Its daily capacity will be about 250 tons.

The Nova Scotia Steel and Coal Company, Limited, of New Glasgow, Nova Scotia, broke ground in June, 1902, for a new coke furnace at Sydney Mines, Cape Breton, Nova Scotia. The furnaces



UNLOADING PIER OF THE DISERONTO BLAST FURNACES, CANADA.

will be 85 by 17 ft., and will have a daily capacity of about 200 tons of basic and foundry pig-iron. Red and brown hematite ore will be obtained from Nova Scotia and Newfoundland. The furnace will be in operation in 1904. The same company has a furnace at Ferrona, with an annual capacity of 33,000 long tons.

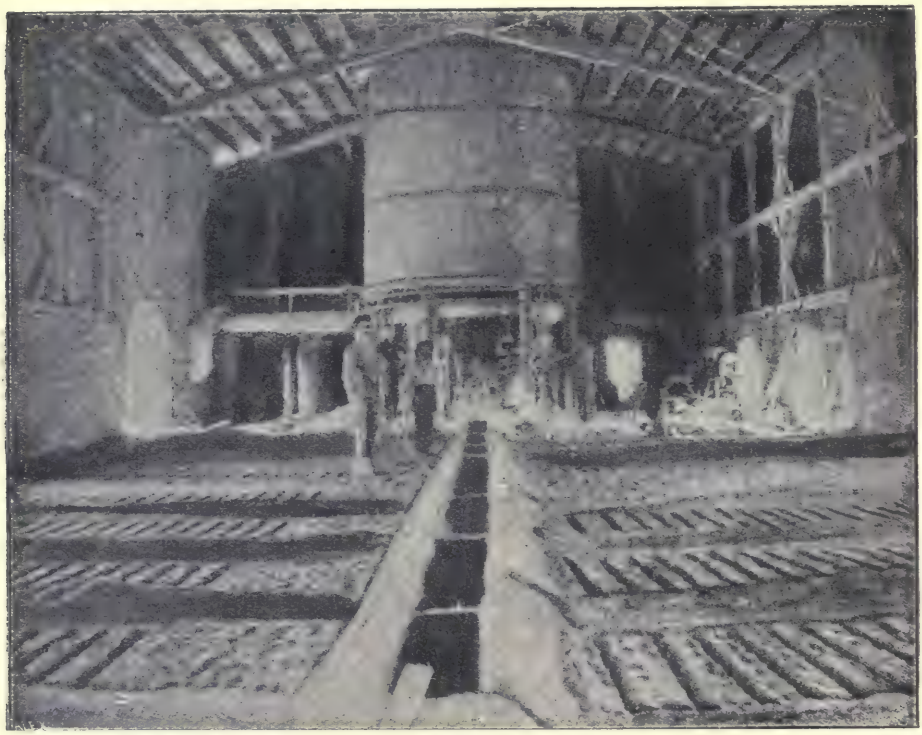
The Londonderry Iron and Mining Company, Limited, of Londonderry, Nova Scotia, is rebuilding Furnace A at Acadia Iron Mines, and expects to blow it in in May, 1904. The furnace will be 75 by 17 ft., and will have an annual capacity of 48,000 tons of foundry iron.

The Cramp Steel Company was organised in 1901 to erect a blast furnace, an open-hearth steel plant, and rolling mills. It has been given by the town of Collingwood a site of 80 acres, a portion of which fronts on the harbour, a cash bonus of 115,000 dollars, and certain exemptions in the matter of taxation. Building was begun in the autumn of 1901, but was not actively pushed until the spring of 1902. The buildings are substantially built of concrete, stone, steel, and

wood, all sheathed in heavy corrugated iron. Details of the new steel plant constructed by this company are given in Chapter XVI.

Working of Iron Ore Deposits.

The United States Corporation already controls a considerable area of the most promising iron lands of Northern Ontario, which possess characteristics similar to those of the developed Lake Superior ranges. It has been feared in Ontario that the control of these ore

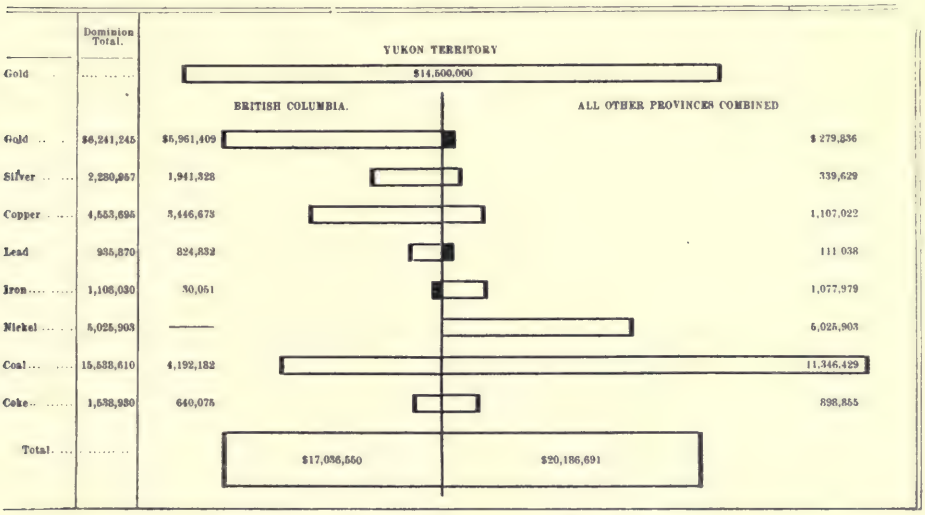


Casting House of Diseronto Blast Furnaces, Canada.

lands of the Province was being got by the Corporation in order not to develop them, but to hold them in reserve and prevent them falling into the hands of competitors. Under the present Provincial regulations the Government has the power to compel the mining of at least 2,000 tons per annum on every 40-acre iron claim located within the last few years. It is not likely it will ever be necessary to exercise this power, now that the Corporation has decided to manufacture on a large scale in the Province. It would be a very unpopular act for any corporation to seek to tie up the iron ore supply of the Province without developing some, at least, of the deposits, and, judging from the operations of the Steel Corporation on the Mesabi and other ranges, they consider it poor policy to run counter to public opinion. The Steel Corporation is stated to be

about to erect a large plant at one of the ports on the Canadian side of Lake Erie. Ore from the Michigan and Minnesota ranges can be laid down at these ports at the same cost as at any of the ports on the south side of the lake to which it is now shipped. Instead of hauling ore from the lake ports to Pittsburg, coke would have to be brought to the smelters on the north shore.

Without a plant in Canada, the Steel Corporation would not be in a position to get a share of the bounties on wire rods which the Dominion Government have recently decided to grant. By having a plant in Canada much more of the ore from the Corporation's mines would enter into the various manufactured forms of iron and steel than it otherwise would, and its only two serious rivals, Germany and Great Britain, having both bounties and duties, on some



COMPARATIVE MINERAL PRODUCTION OF CANADA.

material, against them, would, it is argued, be placed at a disadvantage in competing for the railway and other supplies which will be consumed in Canada during the next few years.

The *Canadian Mining Review* of July, 1903, has the following remarks on the iron ores of Ontario:—

"Our iron and steel industries can be expected to reach much larger dimensions within the next ten years. It is well within the mark to say that Canada will build more miles of railway within that time than any other country. There will be a very large consumption of steel rails, car wheels, and other material which, even if our manufacturers furnish only a comparatively small part of it, should make us take a prominent position as an iron-producing country.

"Under present conditions, however, it can hardly be expected that this increased production of metal will benefit our iron miners to any great extent. This is evident from the effect that the blast furnace industry, which has been in operation seven or eight years, has had on the iron mines of Ontario. In the eastern part of the

Province there are deposits of ore similar in character to those which are being continuously worked in New York and others of the Eastern States. These Ontario deposits are, with one exception, lying idle. If the duty of forty cents a ton on iron ore entering the United States were removed, these Eastern Ontario deposits would be worked. Their output would be shipped across Lake Ontario to enter into competition with ores of similar character which are mined in the Eastern States. Our furnaces, being few and small in size, use little of this eastern ore, which is suitable for mixing with the softer ores of Lake Superior. Iron ores of all kinds from the United States come into Canada duty free, and, in Ontario at least, they displace ores of domestic origin. Two or three of the four Ontario furnaces are believed to be interested in iron deposits in the United States, and thus have little object in attempting to develop mines in Canada. The great iron ranges of Michigan and Minnesota have numerous deposits which are well opened up. Hence the Ontario consumers of ore are enabled to get cheap supplies without giving any attention to the development of mines. Unless the bounties on iron produced from domestic ores are extended beyond 1907, or conditions are otherwise equalised either by the United States taking off their import duty on ore, or by Canada imposing a similar one, there will be little encouragement for the development of iron mines in this country."

Two other plants in Canada that are well-known, and, in their several ways, play a not unimportant part in the iron trade of the Dominion, are that of the Midland Iron Company, of Midland, Ontario, which consists of one coke blast furnace, with an annual capacity of 45,000 tons, and that of the Diseronto charcoal blast furnace, at the town of that name, with an annual capacity of 10,000 tons. These plants mainly supply local requirements, and their structural features—some of which are illustrated herewith—call for no special notice.

There are other blast furnaces at Hamilton (built in 1896); at Radnor, Quebec (built 1892); at Drummondville, Quebec (built a good many years); at Londonderry, N.S.; and at Bridgeville, N.S. Altogether there are four coke and six charcoal smelting plants, with a total annual capacity exceeding a million tons of pig-iron.

There are five important steel-making plants, at Sydney, North Sydney, Hamilton, Trenton, and Collingwood. These can unitedly produce nearly half a million tons of steel annually.

CHAPTER XIV

The Works and Operations of the Dominion Iron and Steel Company, Nova Scotia.

General Conditions.

Among the many enterprises that have been projected, and carried to a more or less successful conclusion, with a view to the development of the resources of the Dominion, probably none was started with a greater flourish of trumpets or a fairer promise of success on a large scale than that of the Dominion Iron and Steel Company. The face value of the enterprise was entirely phenomenal. It was projected to manufacture iron and steel for home consumption and for export on a larger scale than any similar enterprise in the history of the Dominion. It was almost promised that it would be able to produce pig-iron more cheaply than any other concern of its kind in the world. The works are on tide-water, nearer to the markets of Europe than any other on the American continent. The Company had very special advantages granted to it of both a federal and a local character, in the form of exemption from taxation, bounties on production and export, and large and valuable land areas, which, computed to be originally worth 80,000 dols., are now believed to be of the value of three or four times that amount. Coal was cheaply worked within ten or fifteen miles of the works, and was available at a low price. Iron ore was to be imported from Newfoundland at a remarkably low cost, alike for mining and for transport. In a word, it seemed as if the Dominion Company were about to have the iron trade of the world at their feet, and this might possibly have happened had the original estimates of the cost of production been realised, for in such case Dominion pig-iron could have been landed at European ports at about 28s. per ton (including bounty), which is a figure believed to be impossible to any other iron-producing centre in the world. The estimates on which this low cost was founded were virtually the following :—

Iron Ores.	Coke.	Limestone.	Labour.	Other charges.		Total cost.
s. d.	s. d.	s. d.	s. d.	s. d.		s. d.
11 0	7 0	1 3	2 0	2 0	=	23 3

On the assumption that this was to be the cost of producing pig-iron, the promoters went to work to spend capital on a lavish scale, and the capitalisation of the Company's properties has been greater per unit of output than that of any other kindred enterprise with which I am acquainted. The directorate embraced almost entirely men who admittedly knew little or nothing of the business. Plans were adopted from time to time, and partly put into execution, only to be altered or

cancelled after much money had been expended upon them. The first general manager soon quitted the Company's service, and a new manager had to more or less reconstruct all the original arrangements. A rail mill was ordered and partly erected, but was discarded before being put in operation in favour of another mill of more general adaptabilities, which, when I was at the works, had not yet been got to work. The Company's mines in Newfoundland did not turn out so well as was anticipated, although they had cost infinitely more than the price at which they could have been acquired only a short time before they were purchased.* The question of coal supplies has been a constant source of trouble. The Company built a "washery," which was burnt down at an early stage of its career, and up to the time of my visit had not been rebuilt. In some directions the outlay of capital appears to

ORE UNLOADING WHARF (DOMINION IRON AND STEEL COMPANY).

have been very prodigal—as, for example, in the erection of palatial offices and vast piers; in building high walls round the pig-beds and the heating stoves, so as to entirely enclose them, and in other directions. The deluge of exports to Europe which was originally threatened almost ended in a fizzle—not more than 55,000 tons having been exported in any one year. And, finally, the pig-iron which was to have been produced for under 25s. per ton, has not yet been produced, counting all costs, for less than 40s.

The Canadian *Mining Review* of September, 1903, states that it has been admitted by the parties concerned that "the whole works

* The mines were purchased by the Nova Scotia Coal and Iron Company for 120,000 dols., and a four-fifths interest was soon afterwards assigned to the Dominion Company for 800,000 dols.

could be reproduced for two-thirds of what they have cost. . . . There has been a waste of at least 7 to 8 million dols. . . . Experts have worked under the control of a board which did not include one director having a practical acquaintance with the business which he undertook to direct. . . .

"Many protests reached the ears of the directors, but were disregarded, and now that disaster and almost disgrace has overtaken one of the most promising concerns ever launched in Canada, one cannot altogether acquit the board of directors of responsibility in the matter.

"In addition to the failure of the chief executive body properly to control and direct the expert knowledge which was at their disposal, they incidentally failed to ascertain in the earlier stages of their history just what class of steel could be made from their ore, which accounts for a change of programme, the abandonment of some mills, and the purchase of others. It has always been manifest that the Company did not possess a Bessemer ore, and it is well that they are now directing their attention exclusively to the production of a different class of steel."

SHIPPING PIERS OF THE DOMINION IRON AND STEEL COMPANY, SYDNEY, CAPE BRETON.

The Dominion Company was incorporated in 1899, and soon after began construction work at Sydney on a site of about 800 acres. The works now include, in general, a plant of four blast furnaces (85 ft. high and 20 ft. diameter at the bosh); ten 50-ton open-hearth furnaces (estimated capacity of output 1,400 tons per day); a 35-in. blooming mill and pit furnaces; 400 Otto-Hoffman coke ovens (capacity 1,600 tons per day); coal washing and sulphuric acid plants, and essential by-product plants; machine shop and foundry. Ore is chiefly obtained from the Company's Wabana mine (Belle Island), Newfoundland; limestone from Marble Mountain Iron Company; dolomite from George River and New Campbelleton; and coal from the Dominion Coal Company's mines in the Sydney coalfield. The output for the year 1902 was: coke, 338,230 tons; pig-iron, 191,259 tons; steel billets and slabs, 86,424 tons.

There have been few companies whose stocks have been more the sport of Stock Exchange speculations than those of the Dominion

Steel Company. In 1899 the common stock of this Company sold at 15 dols., and the bonds, when put on the market, were sold at 90. In 1900 the preferred stock was offered at 85—8 millions of 7 per cent. cumulative. At a later date this 85 stock went up to 102, and the common stock rose to 79¾, to be followed within a few months by a drop to 8¾. The Dominion Company is capitalised at 33 millions of dollars, of which 18 millions are paid up. Besides this, the Company was presented by the town of Sydney with 485 acres of land, for which the town of Sydney, acting through its Corporation, is said to have paid 85,000 dols., extending for nearly a couple of miles along the front of the harbour. For all this, the Dominion Steel Company has to show the following properties:—

1. Four-fifths interest in the Wabana iron mines in Newfoundland, purchased at a cost of 800,000 dols.
2. Limestone quarries in Marble Mountain, Cape Breton.
3. An investment of 2,000,000 dols. in the properties of the Dominion Coal Company.
4. Four modern blast furnaces, with accessories, stores, etc.
5. A steel-melting plant of ten 50-ton open-hearth furnaces, with Wellman charging machine, etc.
6. A rolling-mill said to be capable of rolling 1,500 tons of steel per shift, but only producing about one-half of that quantity.
7. An engineering shop for repairs, etc.
8. A small steel foundry.
9. An office building of large dimensions.
10. A plant of 400 Otto-Hoffman ovens.

Coal and Coke.

The Dominion Iron and Steel Company appears to have had its origin in the coal industry of Nova Scotia, which had assumed large dimensions before any iron-making enterprise was thought of.

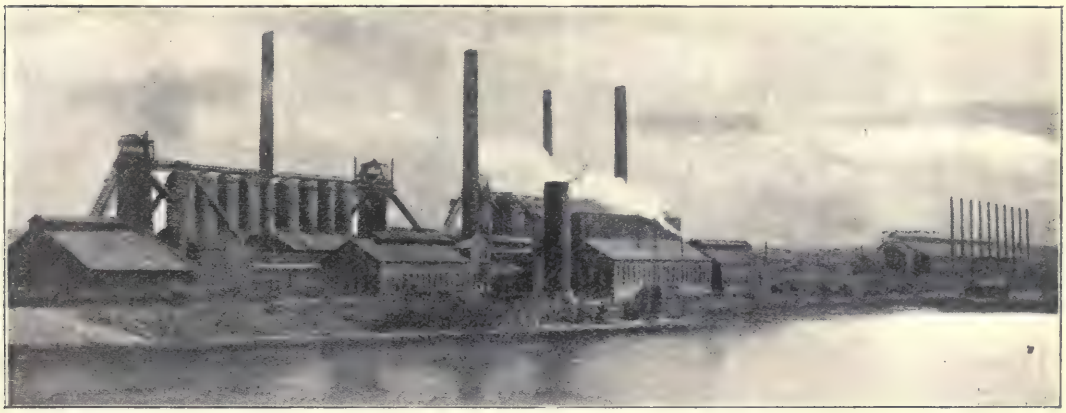
Mr. H. M. Whitney, who has been called the Carnegie of Canada, in 1893 embarked in coal mining in Cape Breton. He has stated that between 1893 and 1899 the Dominion Coal Company had expended between 6,000,000 dols. and 7,000,000 dols. in its Cape Breton County undertakings. The greater part of this money came into the Province from the outside, most of it from the United States. He states the fact that when the Coal Company took possession the output of the mines was 700,000 tons, while in 1898 it was 1,200,000 tons, and the wages paid increased from 700,000 dols. in 1892 to 1,100,000 dols. in 1898. When the Coal Company began its operations in 1893 it found itself cramped for markets, and Mr. Whitney has reminded the Government of the fact that to make a market for Cape Breton coal he had organised the Gas and Coke Company at Boston, which in 1899 was taking coal at the rate of 700,000 tons a year.

By a contract made some years ago, the Steel Company had to pay to the Coal Company 15 cents a ton on all coal mined over 3,500,000 tons in any one year. By a later contract this royalty was reduced to 7½ cents, which, of course, effected a saving to the Steel Company of 75,000 dols. a year on every 1,000,000 tons over

the 3,500,000 tons per annum referred to. The new contract relieved the Steel Company from paying to the Coal Company about 2,000,000 dols., which they were obliged to do by the original option, in order to discharge all the debts and obligations which the Coal Company had contracted. The new contract provided that the Steel Company shall pay all of the Coal Company's liabilities, but to enable them to do this they acquired all of the Coal Company's assets, which, when realised, were expected to leave a large surplus, which it was proposed to use to improve the Coal Company's properties.

The Coking Plant.

Although I did not obtain any specific information as to the financial results of the operating of the coking plant at Sydney, as such, I am quite prepared to believe that this has been the most lucrative part of the Company's business, as it certainly is one of the most admirably



Works of the Dominion Iron and Steel Company, Sydney, Cape Breton.

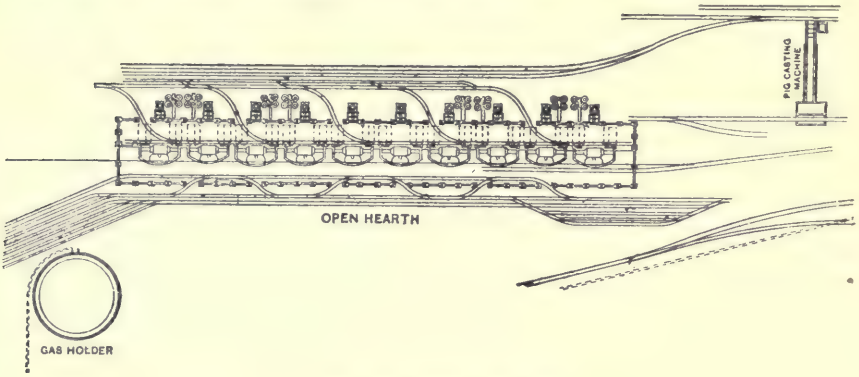
conceived and laid out. The 400 ovens which comprise this plant are of the usual Otto-Hoffman type. They are built just at the back of the blast furnace plant, and the coke is run on to the blast furnaces by a tramway of narrow gauge. The coal is obtained from the collieries belonging to the Dominion Coal Company, within a few miles of the works. There is a variable demand for the by-products produced in the process of coking. In the original estimates, the coke was to be produced for 6s. 3d. per ton, but that figure has usually been exceeded. Indeed, the coal now supplied to the coke ovens costs 5s. 2d. per ton delivered, and the process of coking it costs from 1s. 3d. to 1s. 6d. per ton of coke. The yield of coke is about 70 per cent.

Iron Ores.

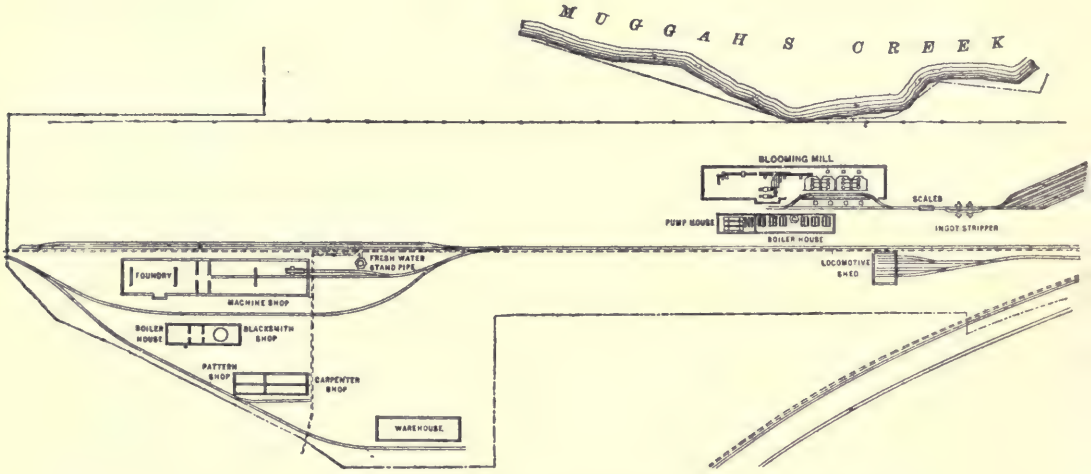
As I have shown elsewhere, there exists in Nova Scotia very considerable quantities of iron ore, especially in the neighbourhood of Pictou, where, according to reports made, both by the late Sir William Dawson and Mr E. Gilpin, the Commissioner of Mines for the Pro-

vince, there are large beds of brown hematite and specular ores, analyses of which give from 62 per cent. to 68 per cent. of metallic iron, as well as red hematite and spathic ores, which run to 40 per cent. of iron. Indeed, samples of these ores were shown at the Colonial and Indian Exhibition in London in 1886, and were awarded a medal and diploma.*

But in the scheme launched by Mr. Whitney, Sydney was chosen as



The Open Hearth Steel Plant.



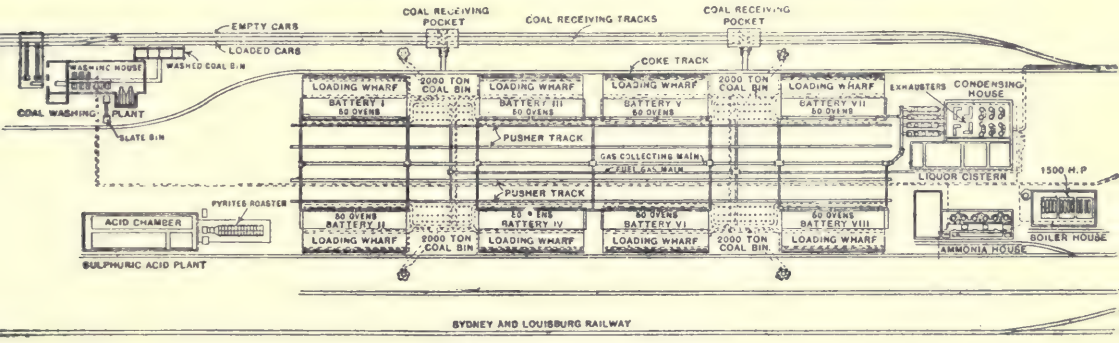
PLAN OF OPEN-HEARTH PLANT, BLOOMING MILL, MACHINE SHOPS, ETC. (DOMINION IRON AND STEEL COMPANY).

the location, partly because of the existence there of the headquarters of the Dominion Coal Company, partly because of the specially favourable situation presented for shipment, and partly because of the advantages and inducements offered by the municipality and otherwise. The site of the works could not easily be excelled, being situated on tide-water, with sufficient depth to take steamers of almost any size

* See Paper on Minerals at Colonial and Indian Exhibition in *Journal of the Iron and Steel Institute* for that year.

The enterprise has also great privileges, including that of exemption from taxation for a period of thirty years, and a reduction of $6\frac{1}{4}$ cents (rather over 3d.) per ton on coal royalties.

There being no suitable known deposits of iron ore in the neighbourhood of Sydney, the Dominion Company turned its attention to the ores of Belle Island, in Conception Bay, Newfoundland, which had just before been acquired by the Nova Scotia Company at a low price, after having been vainly offered for years to capitalists in England and elsewhere. The Belle Island iron ore mines are two and a half miles from the shore. The two workable beds were originally estimated to contain, over a proved area of 817 acres, about thirty-four million tons of iron ore. The upper bed is 5 ft. thick, and the lower bed about $4\frac{1}{2}$ ft., rising to about 9 ft., overlaid by nearly 2 ft. of cover. The cost of mining the ore varies, but much of it can be mined for about 2s. 6d. per ton. The freights from Belle Island to Sydney, a



TO-HOFFMAN COKE OVEN PLANT OF THE DOMINION IRON AND STEEL COMPANY.

distance of about 160 miles, range from 2s. to 2s. 6d. per ton. The ore originally ran to 55 per cent. iron, but it has lately got poorer, and it is now stated to have fallen to under 50 per cent.

TECHNICAL CONDITIONS.

The following statement as to the situation of the Dominion Company's works is made by one who knows the facts:—

"If the cost of producing pig-iron at Sydney is between 10 and 11 dols., it is a great deal more than it ought to be, and considerably higher than Ferrona iron costs when using the same ore, with dearer coal, longer transportation, and a small furnace. If there has been a marked decrease in the value of their Wabana ore, and metallic contents have fallen as low as 43 per cent., this is due entirely to the method of mining, and not to any change in the iron contents in the ore body *in situ*—that statement you can depend upon. The lower bed which they purchased, however, did not average 55 per cent. throughout, although it did average over 50 per cent. The falling off of the metallic contents of the ore as shipped to the furnace does not, of itself, involve the necessity of importing large quantities of high grade ore, as stated. As a matter of fact, the Sydney people have

never used foreign ore of any kind for the production of basic pig-iron for open-hearth purposes; the foreign ore imported was used exclusively for two purposes—in one case to mix with Wabana to gain a lower phosphoric iron for foundry purposes, and in the other case as a reducing agent in the open-hearth furnaces.

"The Sydney works, in their open-hearth furnaces, are making to-day, and have been for months, from Wabana ore entirely, without any admixture of other materials whatever, billets which are filling the most exacting requirements for locomotive material, such as driving axles for the Baldwin Locomotive Company of Philadelphia, the physical and chemical specifications for which are much more severe than are called for in any steel rails made either in the United States, Great Britain, or elsewhere. All that is said in regard to their inability to make steel rails of the necessary quality from Wabana ore, pure and simple, is nonsense. Briefly, what I say is, that there has been no deterioration in the ore *in situ*, and that from this ore alone, without any other material whatever, steel of the very highest grade has been, and can be, made."

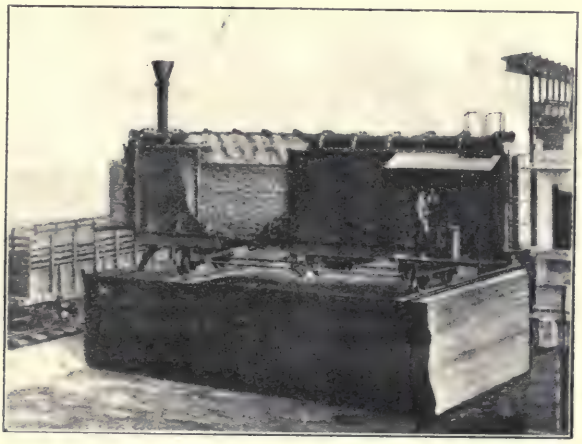
The Iron and Steel Works at Sydney.

In October, 1903, I was afforded the opportunity of going over the works at Sydney of the Dominion Iron and Steel Company. They have a very fine location. With a frontage of over a mile to Sydney harbour, which is one of the best harbours in the Dominion, they enjoy transportation conditions that it would be difficult to excel. The arrangement of the various plants is also good. They were designed by Mr. Julian Kennedy, of Pittsburg. There is not, however, much to be said about them that would be of real interest, because when I was there they were in a transition state, having only one mill employed and two others in course of construction. The blast furnaces, four in number, are quite the largest in Canada, and they are, speaking generally, on American lines. The heating stoves are of the modified Cowper type. The furnaces are estimated to be equal to 300 tons per day, but in 1902 they only produced 191,259 tons, which averages about 120 tons per day, assuming the four furnaces were in blast all the time. This was not exactly the case. At the time of my visit, only two furnaces were in blast. The arrangements made for conveying the molten iron to the open-hearth steel furnaces, and the steel ingots from the melting plant to the mills, are of the usual American description, and appear to be satisfactory enough, but the engine power provided is not equal to the necessities of either the blast furnaces or the mill plant. The new mills will, however, have increased engine power. The open-hearth furnaces are a really fine plant, and have a capacity larger than that of any other Canadian plant. The Company has its own pier, which allows of loading several steamers at a time.

The Outlook.

Probably it will not be deemed that I have devoted too much attention to the plants and operations of the Dominion Company, in view of the fears that its establishment appears to have excited in

Europe, and not least so in our own country. Three years ago, the threat that a plant of this kind, located on the nearest available land for an European trade, was able to produce pig-iron for 25s. and steel blooms for 47s. per ton,* and was to have these figures further reduced by the payment of Federal bonuses to the extent of 8s. 4d. to 12s. 6d. per ton, seemed like holding a suspended sword over the iron trade of the Mother Country. For a time there was undoubtedly a good deal of apprehension that a new enemy—or at any rate a new rival—had arisen that was not to be lightly esteemed. This impression was accentuated by the fact that cargo after cargo of Dominion pig-iron was landed in this country and sold at a price that seemed to leave a profit. But now that it is known that the cost of making this iron is nearly double what was originally estimated, and that the Dominion



MOORE COKE-QUENCHING MACHINE AT THE WORKS OF THE DOMINION COMPANY, CAPE BRETON.

works are far from having realised the promises made on their promotion, the British iron trade probably breathes more freely.

It is quite possible that the Dominion Company may find quite enough to do in the supply of the wants of Canada itself. Those wants are increasing very rapidly. The average imports of the country for the five years ended 1889 were 271,744 tons annually. Mr. Drummond, of Montreal, himself a prominent ironmaster, recently stated that the consumption of to-day is over 800,000 tons a year. It is estimated that within the next five or six years even this output may be doubled, or nearly so. The exact extent of the development of the future must be more or less matter of conjecture, but that the progress will be large and important hardly admits of a doubt. In any case, it will be some time yet before the Dominion Company can export either semi-products or finished steel. When their steel plants are in full swing, the Company will not have much iron to spare for export with their existing plant, which only allows of three furnaces being regularly in blast.

* Address by Mr. Moxam, the general manager, before the Toronto Board of Trade.

CHAPTER XV.

The Canadian "Soo."

When the history of Canadian industry comes to be written, it is probable that the enterprises which have been floated at the "Soo"* under the name of the Consolidated Copper Company, will be the subject of one of its most interesting chapters. It is at least certain that this organisation has had many features more or less *sui generis*, and that its extraordinary combination of success and failure may be effectively used to point many a moral and to adorn many a tale.

The United States and Canada each possess a "Soo"—that is to say, they each own a canal through which the traffic is transported from Lake Superior—the largest body of fresh-water on the surface of the globe—to the waters below. The whole of the iron ores raised in the Lake Superior ranges, amounting to nearly 30 million tons a year, passes through one or other of these canals, and the immediately surrounding neighbourhood has thus been quickened into an active life in the spheres of both shipping and general industry.

The Sault Ste. Marie may be described as the connecting link between Lake Superior and the lower lakes, and also between the United States and Canada—a location which generally borders on the wilderness, and is almost a thousand miles from anywhere. It is difficult to say whether the Canadians are more proud or more humiliated by the fortunes of the undertaking established here under the above designation, which was originated and carried out by the energy and resource of a citizen of the United States.

Short History and Sketch of the Enterprise.

This organisation owed its existence to the action of a Boston lawyer of the name of Francis H. Clergue, who was commissioned, in 1895, by a company of financiers looking for investment, to ascertain what opportunities existed along the basin of the St. Lawrence for hydraulic development. Mr. Clergue, in prosecuting his search, traversed the entire country between Cape Breton and Port Arthur and found various important water-powers, but until the Soo was reached no point was located where it was thought hydraulic power could be economically and advantageously developed. With Lake Superior for a millpond and a fall of twenty feet, conditions appeared favourable for the establishment of a plant that would supply power to an unlimited number of factories, but after the water-power was developed there was

* The "Soo," or Sault Ste. Marie, is the name given to the narrow neck of land which connects Lake Superior with St. Mary's River, and thence with the lower Canadian lake system.

no rush of applications from manufacturers, and the Company were forced to consider how they could utilise the power. An examination of the surrounding forests suggested that spruce was the only wood that could be brought to the works at a reasonable cost. It was accordingly decided to begin the manufacture of pulp, and two hundred and fifty thousand dollars were set aside for the construction of works with an output of twenty tons of pulp a day. It was found that it would cost as much to run a mill that size as one much more extensive —except for the labour charges and increased cost of raw materials— and the works were accordingly enlarged until they had a capacity of one hundred and fifty tons a day, requiring two hundred cords of wood.

The next step was the endeavour to obtain a machine by which the

ALGOMA STEEL WORKS, SAULT STE. MARIE

water could be extracted from the liquid pulp, so that the freight charges on over half of the product of the mills might be saved. This liquid pulp contains from 50 to 55 per cent. of water, and on account of the great cost of transportation it would be difficult to ship it to the European markets as a paying business.

In addition to this, a great deal of the resinous matter remains in the fibre, and when exposed to a changeable climate, becomes decomposed and gives the green stain which is seen in pine boards that have not been properly seasoned.

As a paper-machine maker could not be found to undertake to construct the required mill to produce dry pulp, the machine was designed on the spot, and to build it a machine shop and foundry were constructed. So that with the object of obtaining dry pulp, one

hundred and twenty-five thousand dollars more were expended in the erection of subsidiary works.

The next step in the evolution was a sulphite pulp mill. It was found that with a slight increase in the cost, the ground wood pulp, which sold at a very low price, could be greatly enhanced in value by making it into chemical pulp. For this sulphur was required, and a mine was purchased at Sudbury, for which 100,000 dols. was paid. Then the sulphite paper mill was built, with about the same capacity as the first.

The residue of the product of the mine after the sulphur had been extracted left an alloy of nickel and iron, which suggested the erection of reduction works and a ferro-nickel plant. For these processes of manufacture alkalies were needed, so an alkali plant was founded, the salt being obtainable at Windsor or Goderich on the lakes. Sodium was extracted, but the chlorine was not allowed to go to waste. The Company pumped the chlorine gas into lime water, which was then utilised to bleach the sulphite pulp.

As the sulphite pulp mill was not using all the sulphuric acid gas generated at the refining works, means were devised to utilise the surplus. A process was adopted by which the gas could be compressed into liquid sulphuric acid for the use of ore refiners and in the arts. A sulphuric acid plant was built.

Additional means of transportation, both by lake and rail, being needed, the Algoma Central and Hudson Bay Railway was built, with over one hundred miles of track. There were also purchased, built and chartered, a fleet of sixteen steamers, of which two have been carrying passengers and freight between Toledo, Ohio, and Georgian Bay points and the Soo.

All these are in addition to the Bessemer steel works, the blooming and rail mills, the saw, lath, and shingle mills, at various points, water supply, electric light and power services in the towns on both sides of the river, and the street railway systems.

The Helen Mine, where the iron ore assayed 64 per cent., was developed with a view to securing sufficient iron ore to mix with nickel ore in the production of sulphite. A railroad was projected to connect the mine with the natural harbour of Michipicoton, twelve miles away. The development of the Josephine Mine added to the necessity for a railroad, and while the railroad was being extended further into the rugged country round about, the product of the mines was finding its way to several Canadian iron works.

A "demonstration plant" was erected at the "Soo" by New York capitalists for the manufacture of charcoal, with the saving of by-products. The construction of ovens for the carbonising of wood sufficient for the furnace plant was proposed. It was estimated that 600 tons of charcoal wou d be used daily to feed the four furnaces, and that it would be necessary to denude 25 acres of heavy woodland daily o stock these kilns. Land enough to run them for a long term of years was acquired by the company along its Algoma Central line northward. Mr. Clergue's idea was that the fuel should be taken direct from the kilns by conveyors through underground passages to the stockhouse and charged into the furnace in an absolutely dry state, and it was

assumed that the amount of wood alcohol that would be saved from the carbonising of such quantities of wood would knock into pieces the alcohol market. It was believed that the acetate of lime that would be produced could be treated by sulphuric acid, and that the product would perhaps control the United States market for acetic acid, now supplied largely from Germany.

Mr. Clergue, in entering the new country in 1894, was backed by capitalists, the majority of whom resided in Philadelphia. After selecting the Soo as the site of his new enterprise, he first purchased the Citizens' canal and enlarged it to 20,000 horse-power. This he accomplished by excavating the bed of the stream that formed the

ALGOMA IRON WORKS AND SULPHITE MILL, SAULT STE. MARIE, ONTARIO.

northern boundary of St. Mary Island. Its dimensions, when completed, were about 200 feet wide, 15 feet deep, and 2,000 feet long.

The power from this canal was, as just stated, first utilised in the manufacture of pulp. In the new territory it was estimated that 288,000,000 cords of pulpwood existed. The Sault Ste. Marie Pulp Paper Company was therefore started with a capitalisation of 2,500,000 dols. There were ultimately two pulp mills in operation there, and these were said to be the largest pulp mills in the world. One hundred and seventy tons of dry pulp were turned out per day. This is said to have been the first place at which dry pulp was manufactured.

FINANCIAL ASPECTS.

The Consolidated Lake Superior Company, like so many transatlantic enterprises, was heavily capitalised. It was formed to take over

a number of enterprises, in or adjacent to Sault Ste. Marie, having a nominal invested capital of some sixty millions of dollars. This, however, was in excess of the real value represented by the money spent in developing them. According to a statement attributed to the vice-president, thirty million dollars represents all told the cash investment. The capital authorised was 117,000,000 dols., and that issued was 99,686,000 dols. Of the latter 72,286,000 dols. was common, and 27,400,000 dols. preferred. The common stock represented little but water. In May, 1901, the capital was increased from 20,000,000 dols., partly to acquire the Ontario Lake Superior Company, and partly to declare a stock dividend of 25 per cent. on the preferred, and 100 per cent. on the common stock. Dividends at the rate of 7 per cent., that were not in every case earned, were declared on the augmented preferred stock. It has been presumed that the purpose was to create a demand for the security.

An idea of the operations contemplated by the Company when in operation may be gained from the following list of properties in which it held control through stock ownership :—

	Stock. Dols.	Bonds. Dols.
Lake Superior Power Company	2,000,000 ...	—
Michigan Lake Superior Power Company	500,000 ...	3,500,000
Sault Ste. Marie Pulp and Paper Company	2,000,000 ...	—
Tagona Water and Light Company ...	200,000 ...	160,000
Algoma Central and Hudson Bay Railway	10,000,000 ...	—
Mamtoulin and North Shore Railway ...	1,000,000 ..	—
International Transit Company	150,000 ...	—
Transit St. Mary's Traction Company ...	400,000 ...	—
Algoma Commercial Company	10,000,000 ...	—
Algoma Steel Company, Ltd.	20,000,000 ...	—
British America Express Company ...	100,000 ...	—

These properties embrace a great variety of enterprises, such as transportation, iron and steel manufacturing, including the mining of iron ore, nickel and copper, the smelting of copper, pulp making, lumbering, electric lighting, etc.

The Stoppage.

It was on September 18th, 1903, that this paralysing blow fell upon the Soo plants of the Lake Superior Consolidated Company, which at that time consisted of the following departments and numbers of hands, which are published here as showing the extent of the enterprise, in its various branches :—

"The Helen ore mine, employing forty men ; the Grace gold mine, employing seventy men ; the Michipicoton branch of the railway, employing fifty men ; the Veneer mill at Sault Ste. Marie, Ontario, employing seventy-five men ; the saw mill at the Soo, employing 100 men ; the car shops at the Soo, Ontario, employing twenty men ; the Algoma Iron Works at the Soo, Ontario, employing 100 men ; the sulphite pulp mill at the Soo, Ontario, employing 100 men ; the Gertrude nickel mine at Sudbury, employing eighty men ; the reduction works at the Soo, Ontario, employing forty men ; the paper mill at the Soo, Michigan, employing five men ; the pine veneer, log, pulp, and

charcoal operations along the Algoma Central Railway, employing 1,700 men; the retort plant at the Soo, employing ninety men; and the Algoma steel plant at the Soo, employing 150 men."

The stoppage of the Clergue enterprises caused a shock throughout the whole of the Dominion, the more so that it came so soon after the disillusionment of the people of Nova Scotia, in respect of the still greater iron-making enterprise at Sydney. The announcement of the suspension was conveyed to my friends and myself while we were *en*

POWER CANAL AND PULP MILL, SAULT STE. MARIE, ONTARIO.

route to examine the "Soo" plants, but under the circumstances we decided to postpone our visit, so that I have not had the opportunity of going over the various plants.

THE IRON ORE RANGES OF THE "SOO."

In the neighbourhood of the "Soo," on the Canadian side, there is a district, perhaps about one hundred miles square, which has now been found to contain iron ore deposits. Red hematite, brown hematite, and limonite are all there. The Michipicoton mines have given a fresh stimulus to the iron-smelting industry of Old Ontario, shipments having been made to the blast furnaces of Midland and Hamilton, the chief centres of the older iron and engineering industries of Canada. Cleveland, Ohio, has also taken supplies of ore from the Michipicoton mines.

The character and chemical composition of the ore and the accompanying geological structure of the district suggest that the

Michipicoton Range is the northern continuation in Canada of the Vermilion range of Minnesota, which has yielded Lake Superior ores to the Pittsburg iron and steel works for years past. The ore occurs in mass around the rim of Boyer Lake, and when originally found was only covered with a sparse coating of moss. The ore is got by open quarrying, with appliances similar to those used on the American side at the Mesabi and Marquette mines.

The Helen was the first mine opened, but the company has conducted testing operations on quite a numerous group—the Josephine, the Frances, the Emily, the Grace, etc.—with satisfactory results more or less. The United States Lake Superior companies have expended much money in exploring the contiguous regions. They maintain a good deal of reticence regarding the results, but are known to have acquired licenses for some properties from the Provincial Government of Ontario.

Michipicoton is situated one hundred miles from Sault Ste. Marie along the northern shore of Lake Superior. Quite a town is springing up here.

For a long time, with but few exceptions, the explorations carried on north of Lake Superior were not satisfactory, and many bitter disappointments have been met by explorers in Canadian fields. As a general thing the ores found there were not suitable. They were either titaniferous, thin blankets, much mixed, or otherwise unfit for the purposes in view ; but it has been properly said that the vast extent of the undeveloped and almost unexplored territory north of Lake Superior, from the vicinity of the Sault on the east to the Rainy Lake district on the west, is such as to make any predictions as to the future of this territory absurd. There have, however, been two or three explorations in this area that have "arrived," so to speak. There are the Helen and neighbouring deposits of the Michipicoton range, and the Atikokan region, one near the east end, and the other clear to the west of the ore-bearing district.

The range of which the Helen Mine is the most westerly opening and outcrop has been traced by the Clergue interests for some fifty miles, and various ore bodies are known to exist upon it. While the ore of the Helen is a brown, that of the Josephine, the only other deposit that has been explored to any considerable extent, is a red ore, much like some of the Vermilion ores in appearance. It is stated to run better in iron and lower in phosphorus than Helen, which is not entirely satisfactory.

Dr. Coleman recently made a visit to the Michipicoton mining division, where he found at the Helen Mine numerous drill borings made, and one level driven into the body for a distance of nearly 300 feet, proving its length in one direction to be about 1,000 feet. The depth, as shown by the boring, is about 300 feet, and Dr. Coleman had no hesitation in saying that the quantity of ore is to be measured by millions of tons. The average of all the borings he found to be 64 per cent. of iron, and the ore was declared to be remarkably free from impurities.

Up to the time of the Clergue works being planted at the "Soo," the ore of the Lake Superior mines had been carried to the coal of

Pennsylvania. Mr. Clergue made the point of assemblage of the raw material of manufacture on the shores of Lake Superior itself. Beginning with the utilisation of the Falls themselves as a means of supplying electric power, Mr. Clergue soon expended many millions of dollars in the construction of pulp and paper mills, in power works, and in various forms of manufacture intended to utilise the wood and mineral resources of the district on the northern shores of Lakes Huron and Superior. A large plant for the production of iron and steel, and works on a fairly extensive scale, was one of the last projected. The coke for smelting had to be brought from Pennsylvania, but it was claimed that this could be done more cheaply than the iron ore could be carried to Pittsburg, while the facility for distribution would be better from the lake shore. Steel works have lately been built under kindred conditions. At Collingwood, on Lake Huron, as named in another chapter, works have been started, in which the Cramps, of Philadelphia, are interested.

One of the special difficulties attending the Clergue steel works was the fact that the ore contained too much phosphorus to make a suitable basic pig. Another was that the supply of ore, such as it was, seemed to be inadequate. In two essentials, therefore, the project was seriously handicapped from the outset.

"New York World's" Recital.

The *New York World* has the following remarks on Clergue's meteoric career in relation to the Soo enterprises :—

"It was in 1897 that the various enterprises, projected or under way, were welded into a whole by the organisation of the Consolidated Lake Superior Company, under a charter granted by the State of Connecticut. Clergue made the consolidation. He became vice-president and general manager. It was announced that the miracles were about to begin. 'Step up, gentlemen,' said the prospectuses, 'the master mind is now at work, and the earth, the lakes, and all that is in them will yield tribute.'

"Clergue offered his stock. It was greedily taken, largely but not wholly in Philadelphia and Pennsylvania. A syndicate of capitalists, including some of the big men in railroad and iron and steel enterprises in the country, took a large amount of the preferred stock at par and for cash payments in instalments. A bonus of two shares of common stock was given with each share of preferred. Dividends of 7 per cent. were promised. The bait was alluring. Even the frugal Berks County Dutch and the Mennonites bought nearly two millions' worth of it.

"After that the Algoma Tube Works, Limited, was incorporated with a capital of 30,000,000 dols. It was the largest company ever incorporated in Canada, and was another child of the brain of Clergue. The work went on briskly. The annual report published in November, 1901, said that the amount of earnings to be realised—'to be' realised mark you—from June 30th, 1901, to June 30th, 1902, upon the transportation and sale of iron ore would be sufficient to pay all dividends on the preferred stock.

"Everything at Sault Ste. Marie glittered. The stock was

advertised and boomed. It was listed on the Philadelphia Bourse, and the investors tumbled over one another to get it. In 1902 the preferred stock sold for 70 dols. a share, and the common, which had been used principally as a bonus, was 36 dols. a share. There were a great many Consolidated Lake Superior millionaires—on paper.

"When the great power canal, with the largest power-house in the world, was opened early last year, there was a tremendous celebration. This was the apotheosis of Clergue. They glorified him. He was hailed as the benefactor ofthe North-West."

The story of the collapse of inflated capita in the Consolidated Lake Superior Company is probably without a parallel in Canadian industrial records. The Company was capitalised at 117,000,000 dols.

Sulphite Mill, Sault Ste. Marie, Ontario.

Its assets were mainly the securities of the companies which it consolidated with a par value of ninety millions. These were sold in December, 1903, for 4½ millions of dollars to the syndicate that advanced the money. It is a significant case of overdoing a watered stock and a future "earning capacity."

All the operations carried on at the "Soo" were on a colossal scale. The Michigan Lake Superior Power Company and their Canadian ally constructed a retarding dam across the foot of Lake Superior at this point. The Michigan canal was expected to so draw from Lake Superior as to necessitate this retarding system. At the lower end, where the canal widens to more than a quarter of a mile, and its water enters the power-house, an enormous amount of earth had to be excavated. The power-house was equipped with eighty Stillwell-Bierce turbines of 600 horse-power each. There were three stories of steel

construction in this great power-house, which is 1,400 ft. long, and more than 100 ft. high, and it was stated to be the largest job of steel erection under way at the time, having more than 6,000 tons of shapes and plates.

On the Canadian side of the river, a second 50,000 horse-power canal had almost been completed. Eight large steam dredge boats were working day and night on the Canadian channel above the Government lock, preliminary to the erection of an ore dock 1,800 ft. long, for the handling of Michipicoton and other iron ores. This dock is near the steel plant, and a short distance from the larger plant contemplated for the future.

With the completion of the great canal upon the American side of the river it was necessary to take steps to conserve the flow of Lake Superior, for the cross-section of this canal is so great that it was expected to materially increase the discharge from the lake. Estimates were therefore issued for a steel and concrete dam across the river at the head of the rapids, nearly on the line of the great international bridge, and the work of construction was carried on in the winter of 1901-2. This was not a submerged rock-filled dam, such as would naturally be placed in such position, but the Government engineers insisted that it should be of concrete piers with steel shutters and gates.

Details of the "Soo" Steel Works.

Of the structural features of the iron and steel works at the "Soo" there is not much to be said. The works are not exceptionally fine or novel in any way. The scheme of which they formed a part was to make pig-iron and manufacture steel rails, for the use of the Canadian railways, by the Bessemer process. Two blast furnaces, of the ordinary American type, have been erected, and two acid-lined Bessemer converters, each of five tons capacity.

After being blown the metal was poured into moulds on bogies and stripped by an overhead Wellman-Seaver stripping crane, provided with an auxiliary trolley to change the ladles on the ladle crane. There are two four-hole pit furnaces into which the ingots are charged. They are delivered to the blooming tables, and to the rolls also, by a single overhead electric crane of Wellman-Seaver design. The ingots were passed through a 32-in. mill, rolled and re-charged into Siemens regenerative heating furnaces, of which there are four. The rail mill consists of three stands, first and second roughing and finishing mills, and is driven by a 40 in. by 48 in. Porter-Allen engine. Electrically driven transfer tables manipulate the material here, and the rolls are under an electric overhead crane for handling rolls when changing sections. After passing the saws and a cambering machine the rails are cooled and finished and handled by pneumatic hoists on cars for disposition, all the operation being from start to finish under one roof. This plant was intended to make rails of 30 to 60 ft. length and of any section to 85 pounds, as well as to roll structural shapes. Tracks of the Algoma Central and Hudson Bay Railway run into the buildings at the finishing end and connect with the ore docks and furnaces at the other end.

The Demand for Steel Rails.

Special interest was taken in Mr. Clergue's attempt to manufacture steel rails. The Dominion Government had promised to put a duty of 7 dols. per ton on foreign rails—the American tariff rate—so soon as he could satisfy them of his ability to supply the Canadian demand, which, now that the construction of the Grand Trunk Pacific is assured, may be reckoned at 100,000 tons per annum. Meanwhile, he had the immediate benefit of the bounties on pig-iron and steel ingots, his raw material. The Algoma Works have the only rail-mill in the Dominion, and it is commonly said in Canada that they were specially favoured by the promise of a duty to enable them to compete against the United States, the duty providing a virtual bonus of 29s. 2d. per ton.

So far as the steel plant is concerned, there is no reason to suppose that under existing circumstances it could have secured anything more than a local trade. There is no duty on steel rails entering Canada, and the United States are certain to be keen, and more or less successful, competitors of any Canadian plant that has not particularly favourable geographical conditions to assist it. This the "Soo" plant undoubtedly has for Ontario business, although Pittsburg works could probably send rails to the "Soo" district as return freight in ore-carrying vessels at a very low cost. The total quantity of steel rails annually imported into Canada—there are none made in the country, except those that have been the product of the "Soo" works in 1902-3—is over 60,000 tons, but the demand is bound to greatly increase, with the various new railway extensions now arranged.

This short sketch of the remarkable enterprise at the "Soo" is illustrated by several reproductions of photographs of the principal structures there, the use of which has kindly been obtained through the Board of Trade of Montreal.

CHAPTER XVI.

Some Pioneering Plants and Programmes.

Early Iron-making Plants in Nova Scotia.

The first attempt at developing the mineral wealth of Nova Scotia seems to have been made in Annapolis County in the year 1825. The Annapolis Mining Company was started with a capital of £10,000 for the manufacture of hollow ware and bar iron, and as such was fed by Government bounty. The works were erected on the eastern bank of the Moose River, and the ore used was found in the immediate vicinity. The works were in operation for a brief period only.

The next attempt was made in Pictou County, at Stellarton. A blast furnace was erected there in 1828. The furnace was 40 ft. high, and 8 ft. in diameter at the bosh. Iron was first produced at the end of 1829, and an output of seven or eight tons per twenty-four hours was considered first-class; but the iron was hard and useless for foundry purposes.

At Londonderry, in the year 1849, the Arcadia Iron Works were started. Operations were commenced with a Catalan forge, but three years later a charcoal blast furnace was erected, and continued in blast until 1874, when the property was acquired by the Steel Company of Canada. Modern blast furnaces were erected, and a plant for the manufacture of steel by the Siemens direct process. The location of the works is stated to have been against successful working, the nearest coalfields being distant 34 miles, while the Pictou coalfields were 50 miles further east. The ores used required calcining before use. The company paid Dr. Siemens £8,000 for the right to use his process, but in the year 1887, after a chequered career, the plant, mines, and railway were sold to the Londonderry Iron Furnace Company.

The Nova Scotia Steel Company.

The Nova Scotia Forge Company was started at New Glasgow, Pictou County, in 1872, with a capital of 4,000 dols., or £800, for the purpose of manufacturing railway and marine forgings. Here the forging up of wrought-iron scrap was continued until 1882, when it became necessary to look for a supply of steel, and the Nova Scotia Steel Company was founded, with a capital of 160,000 dols., having for its aim the manufacture of steel by the Siemens-Martin open-hearth process. This was the beginning of the now important enterprise which is erecting at North Sydney what may be the finest plant in the Dominion.

Originally the plant at the Nova Scotia Company's steel works consisted of three melting furnaces, two 20- and one 30-ton. The plant

now embraces one 50-ton and two 35-ton furnaces working with basic bottoms, and one 20-ton furnace working with an acid bottom. The output from these works has more than doubled since 1893.

The Nova Scotia Steel Company acquired in 1890 the plant of the New Glasgow Iron, Coal, and Railway Company, which was formed in 1888 for the purpose of manufacturing pig-iron from the ores at Springville and Bridgeville on the East River. The mines are distant some thirteen miles from the main Intercolonial Railway. The site of the iron works was chosen at the junction of the two railways, nearly eight miles from the steel works. The new town was named Ferrona, and the new works were commenced in April, 1891, the plant being put in operation sixteen months later. The plant consisted of a blast furnace 65 ft. high, with 15 ft. 3 in. diameter of bosh. The output from this furnace was 112 tons per twenty-four hours.*

The Nova Scotia Steel Company was founded in January, 1895, when it acquired the interests of the New Glasgow Iron, Coal, and Railway Company, and of the Nova Scotia Steel and Forge Company, and carried on the business previously conducted by these companies. In the year 1900 the Nova Scotia Steel Company purchased as a going concern the business and property of the General Mining Association, including its leases of the Sydney Mine and Point Aconi areas, which contain a superior quality of coal, with good facilities for shipment. The New Nova Scotia Steel and Coal Company, Limited, subsequently constituted, acquired the whole business, property, and assets of the Nova Scotia Steel Company, Limited, as a going concern, more particularly :—

1. Lands, shafts, buildings, plant, and railways used in connection with the coal mines, together with the leases of the coal areas acquired from the General Mining Association. These areas (14,900 acres) extend from Sydney Harbour to the entrance of the Great Bras d'Or, and are estimated to contain 216,000,000 tons of coal. The Point Aconi areas have not yet been worked.

2. About 7,824 acres of freehold land in Cape Breton.

3. A freehold iron mine, situated at Belle Island, Newfoundland, and estimated to contain 6,000,000 tons of red hematite ore. (The average iron contents of recent shipments from this mine is stated to have been over 55 per cent. The mine is equipped for an output of over 300,000 tons during the shipping season ; boats of 6,000 to 7,000 tons capacity have been loaded at the rate of 1,000 tons per hour.) The Company also own several deposits of iron ore, in fee simple or by lease, in Nova Scotia.

4. Leases of coal areas, containing two coal seams of good quality, one of which is now being opened up, situated within six miles of the steel works at Trenton.

5. A standard gauge railway, 12½ miles in length, with 3·87 miles of sidings, with rolling-stock, in Pictou County, Nova Scotia.

6. About 160 acres of freehold land at Ferrona, Nova Scotia.

7. A blast furnace, a coal-washing and a coking plant, built in 1892, at Ferrona, with a capacity of 100 tons of pig-iron per day.

* Paper read by Mr. Stephen Barrie before the West of Scotland Iron and Steel Institute, January, 1901.

8. About 50 acres of land at Trenton, near New Glasgow, on which are steel works, consisting of four steel-melting furnaces, together with rolling mills, forges, and other plant, capable of turning out 100 tons of finished steel per day.

9. Large limestone and dolomite properties in the county of Cape Breton.

A modern coal-shipping pier with a storage capacity of 5,000 tons has been completed for the Company at North Sydney. The pier is advantageously situated for loading, there being a depth of 30 feet of water at low tide along the shipping side, so that the largest steamers can be bunkered promptly. With seven chutes aboard, coal has been loaded at the rate of 100 tons a minute. Provision has also been made for the loading of sailing craft from chutes where there is not sufficient depth of water for steamers to load. Coke ovens, with auxiliary washing plants, are in operation both at Sydney mines and at Ferrona, turning out sufficient to supply the needs of the Company. The Company has ten time charter steamers, each averaging 5,300 tons total dead-weight capacity. Two freight steamers, to be used in hauling coal from Sydney mines to the St. Lawrence and Lower Province ports, were lately purchased in Scotland. It is expected that the Company's annual output of coal will soon amount to 1,000,000 tons.

Financial Aspects.

The profits of the combined businesses of the Company for the year 1900, exclusive of bounties, as certified by the auditors, amounted to 530,581 dollars, and for the three years, 1898-1900, they averaged 379,380 dollars yearly. In addition, the Company received by way of bounties on pig-iron and steel ingots from the Government of Canada, 398,506 dollars, being a yearly average of 132,835 dollars. The total profits for the three years, including bounties, amounted to 1,536,646 dollars, being a yearly average of 512,215 dollars. The results of 1901 were :—

Statement of former Nova Scotia Steel Company for year ending December 31st, 1901.

	Dollars.
Profits for the year	655,273
Balance brought forward	47,883
Total available	702,156
Deduct :	
Dividend, 8 per cent. on preferred stock	82,400
Interest on mortgage bonds	45,726
Depreciation	20,000
Reserve for bad debts	10,000
Plant renewals	200,000
Dividend on 10 per cent. ordinary stock	103,000
Balance, surplus	242,030

The Estimated Future Average Yearly Profits after Development of Coal Areas, etc., has been computed at the following figures.

	Dollars.
From sale of 275,000 tons (2,240) of iron ore at 70 cents	192,500
From sale of 500,000 tons of coal at 80 cents	400,000
From iron and steel works	150 000
Being a yearly average profit of	742,500

These figures are presented because they go far to convey an idea of the financial conditions under which iron and steel plants appear to be carried on in Canada at the present time. It can hardly be said that those conditions are entirely favourable. It will be noted that the preferred stock carries a dividend of 8 per cent., which is 1 per cent. more than the preferred stock of the United States Steel Corporation, despite its huge capitalisation. The necessity for paying so high a dividend is an indirect evidence of doubtful stability. But if the profits anticipated are realised, the Company should do well. A profit of 70 cents (2s. 11d.) per ton on iron ore, and of 80 cents (3s. 4d.) on coal would be regarded with much approval at home. The estimated profit on the pig-iron and steel may be taken at about 8s. 6d. per ton, assuming that the blast furnace and the steel plant were fully employed for 350 days in the year.

The total capitalisation of the Nova Scotia Steel and Coal Company in 1902 was 9½ million dollars (practically two millions sterling), of which a million sterling was common stock. This appears to be a large capitalisation, considered in relation to the actual output of materials, but the great extent and growing value of the mineral areas owned by the Company has to be taken into the account.

The Nova Scotia Company was the first to undertake the export of iron ore on a large scale from the American Continent to Europe. In 1902, the Company sold for foreign delivery about 300,000 tons of the ore raised at their Newfoundland mines, of which 240,000 tons were sold for delivery in Scotland and in Germany, and 60,000 tons were sold for delivery in Philadelphia. The Company is still sending a good deal of iron ore annually to Germany. I do not know the price at which the ore is being sold, but it is not improbable that it may be a business that can be extended if the ore supply is sufficiently ample. The Belle Isle ore is stated to average rather over 50 per cent. of iron, and it is claimed that it can be put f.o.b. at about a dollar a ton. If 6s. to 7s. more could regularly deliver it at a British port, the business might be satisfactory for both buyer and seller.

The New Plant at North Sydney.

The prospects of the Dominion going a long way towards complete autonomy in the manufacture of its own iron and steel, despite the discouragement induced by what has happened at Sydney, Nova Scotia, and the "Soo," in Ontario, are unquestionably bettered by what is now going on elsewhere. Among the other great iron-making enterprises now in progress, one of the most important is the plant of the Nova Scotia Steel and Coal Company at North Sydney. I visited

this new plant, and was shown over it by Mr. Graham Fraser, the general manager. It has an ideal location, close to tide-water, and within a mile of large and important collieries, while the Company possess an interest in the ore deposits of Wabana (or Belle Isle) in Newfoundland, whence the ore will be shipped to its own jetty at North Sydney. In short, it is exactly the "proposition" of the Dominion Steel Company over again, with this difference, that the outlay, while unquestionably heavy—for everything is being done in a thorough and durable fashion—will probably, relatively to results, be much less per unit of output than that incurred at the Dominion plants.

The existing plans provide for the erection of two blast furnaces, an open-hearth steel plant of six 50-ton melting furnaces, and accessory rolling mills, to roll merchant steel generally. The Company is also building a large battery of by-product coke ovens, and will make coke from the coal mined at their own collieries close at hand. All transport will be done on their own private railways, and their own steamers will convey the ore from Belle Isle to their wharf, adjoining the works, which are about a mile from the town. When I went over the works in October, 1903, one blast furnace had almost been completed, the coke ovens were also almost ready, and the foundations of the open-hearth plant were laid.

The same Company have for a number of years carried on iron works at Ferrona, in Pictou County, and steel works at Trenton, near New Glasgow.

The Collingwood Works, Lake Huron.

Among the subsidiary iron and steel-manufacturing concerns that have recently been constructed in the Dominion, mention should be made of the Collingwood plants on Lake Huron, Georgian Bay. I had no opportunity of going over this plant, but I am informed that it has been specially designed to produce steel angles, bars, squares, rounds and various other shapes required by Canadian trade, from 6 in. down to ¼ in., at the present rate of 120 tons per day.

The steel plant consists of two open-hearth basic furnaces, a hydraulic plant, rolling mills, and machine shops, located at the northern limits of the town of Collingwood. The site comprises 87 acres, 30 of which is water lots, and has 800 ft. of lake front on deep water. It is immediately alongside the Grand Trunk Railway.

The furnaces are served by three steel cranes, one of 30 tons for handling the ladle, and the others 20 and 10 tons respectively for handling the ingots.

Each furnace has a capacity of 20 tons, and is lined in the bottom with magnesite fire-brick, and above the fire line with silica fire-brick. The furnaces are, with some slight improvements, replicas of the latest furnaces at Sharon, designed by Ambrose Monell, and recently purchased by the United States Steel Corporation.

It is believed that the situation of the Collingwood plant gives it ready access both to raw materials and to the markets for finished wares. Steel scrap will be secured mostly from the railroads; pig-iron from either the Midland or the Sydney works; coal from Pittsburg, and limestone from the Company's own quarries. By the Grand Trunk

Railway direct connection is secured with the industrial centres of Central Ontario, and by water with all the ports on the great lakes, and the distributing centres for the North-West.

The principal mill at Collingwood is claimed to be one of the most modern and best equipped in the country. The mill is intended to bloom ingots and finish them in sizes from 6 in. down to ¼-in. angles, bars, rounds, squares, and various other shapes. The ingots from the open-hearth furnace are brought in here when stripped on the narrow-gauge railroad, and are charged into two reverberatory heating furnaces, where they are re-heated ready for blooming. Here they are broken down in a three-high 18-in. roughing mill into billets. The material to be finished from 1¼ in. up goes to an 18-in. finishing train, which will roll from that size up to 6 in. The train is equipped with a 60-ft. cooling bed, and is served by two alligator shears. The motive power is supplied by a 28 by 56 Reynolds-Corliss engine, constructed in the shops of Inglis & Co., Toronto, and designed to develop 750 h.p. After shearing, material for smaller sizes is sent on to a 10-in. train, known as a Belgian semi-continuous mill. It is designed for a large tonnage, has plenty of power, and is equipped with looping devices and underground tunnels, leaving the floor clear, the steel as it passes from the rolls dropping into these tunnels. It will run a bar 120 ft. long. This mill has a capacity of 100 tons per day.

South of the rolling mills is placed the stone power house and machine shop. It is 170 ft. long by 70 ft. wide, and contains four tubular boilers, 16 ft. by 5½ ft., producing 150 h.p. each. A 90-h.p. Atlas engine furnishes power for the machine shop, and also drives the arc and incandescent electric light plant. A 10 in. by 12 in. McGowan Monitor Duplex pump lifts water from a spring creek on the grounds to the 9,000-gallon tank, which supplies the boilers.

William Cramp and Charles D. Cramp, general manager and superintendent respectively of the William Cramp Company, of Philadelphia, until about five years ago—when the firm became a public company—and Major Collins, of Brazil, Indiana, are the practical men in the Company. Major Currie is the general manager. He is assisted by Mr. James Royce, who is a technical graduate of the Massachusetts School of Technology, and who spent four years in the leading engineering works of the United States, and by Mr. A. C. McMaster, a graduate of the School of Practical Science, Toronto. Mr. Royce is superintendent of the works. All the engineering work for this plant was planned and drafted in their own engineering department by Canadian engineers.

The various departments are in charge of practical experts, Americans and Scotchmen, who are all young men. In this respect, the Canadians appear to have adopted American ideas, for in a considerable number of cases, at both coal mines and iron and steel works, younger men were in charge than are usual in England.

CHAPTER XVII.

General Mineral Resources and Industries.

The general industrial resources and conditions of a country that extends over an area of more than three-and-a-half million square miles, possesses almost every description of climate and soil, is endowed with almost every form of mineral riches, rejoices in every variety of cultivable product found in the temperate zone, and can boast of a practically unique system of waterways, is obviously a "large order,"—to make use of a commercialism—and one that cannot

General View, Trail Creek, B.C., Looking West from the Mill.

easily be executed in the course of a single chapter. Nevertheless, it is proposed here to attempt a summary of these resources and conditions, the better to facilitate an understanding of the fuller details that are to follow.

Iron and Steel Resources and Outlook.

Two more or less diametrically opposite views are entertained as to the extent of the coal and iron resources of the Dominion, and as

to the figure which those resources are likely to enable the country to cut in the iron trade of the future. The optimistic view is that Canadian coal and iron ores are as abundant, as easily worked, as well adapted to cheap and effective combinations, and as promising in their outlook, as those of the United States, whose prosperity owes, perhaps, more to its coal and iron than to any other individual advantages, natural or acquired. The other view—that of the pessimists—is that Canada has not the natural resources required for a great iron industry; that most of the coal and iron is found at the extremities of the country—in Nova Scotia at the east and British

Copper Cliff Rock House.

Columbia at the west—whilst almost all the manufactures are carried on in Ontario and Quebec; and that the great distances to be traversed, the influence of climate, the menace of American competition, the sparse population, and other conditions, will prevent the rapid advance of the Dominion in this as in other aspects of progress.

There would seem to be sufficient evidence available to justify the belief that the Canada of the future will develop a great iron industry, although that future may be long deferred. A Toronto correspondent of the *Iron Age* (New York), writing in 1901, declared that "Men of experience in the iron trade of America entertain the opinion that in view of the extent of the ore deposits and the facilities for transportation, especially by water, Central and Eastern Ontario

are at least on an equality of footing as regards the production of iron and steel with the most favourably situated districts of the United States, and that there is no presumption in looking forward to the time when Ontario will be the seat of an important and highly developed industry in the making of iron and steel."

No doubt this highly optimistic view of the future will not be accepted by many. It is customary, alike in the States and in Canada, to say that "there is only one Mesabi," at which 60 per cent. ore can be produced for less than 1s. per ton. This may or may not be so, but it is well to remember that the United States had been a "going

Typical Gold Mine Shaft House in British Columbia.

concern" for well over a hundred years before the Mesabi range was discovered, and that there are many possible Mesabis in Canada, in the unexplored and undeveloped wilds of Ontario and British Columbia.

One thing appears to be certain. The Western regions of the Dominion, and more especially British Columbia, possess greater resources in iron ores than are known to exist in the Western States on the other side of the line, and that, too, in the neighbourhood of coalfields. Indeed, at the present time, iron ores are being exported from Vancouver to the United States, to be smelted there, because the ores are of higher character than any found in that country, and it will not be overlooked that in doing this they have to pay a Customs' duty of 40 cents (1s. 8d.) per ton.

There is, however, reason for the belief that the iron industry of Canada, owing to the mineral locations, is most likely to develop at one or other of the two extremities of the country—Nova Scotia or Vancouver. Let us briefly consider the two situations. The greatest iron-making enterprise in Canada to-day is that of the Dominion Company, in Cape Breton. The future of the Dominion Company's Works is likely to be very largely identical with the progress of the Canadian iron trade generally. It is improbable that any better location for the industry can be found, although it is likely enough that North Sydney, where the new works of the Nova Scotia Steel

Braithwaite Gold Dredge on Sask River.

Company are located, is equally good. Both plants are on tide-water, both are within a short distance—from one to twenty miles—of suitable coal, and both can command, *at present*, ample supplies of cheap iron ore, and not too costly labour.

The future of this industry is largely identified with the extent and duration of the iron ore supplies now being mined by both the Dominion and the Nova Scotia Companies on Wabana, or Belle, Island, in Newfoundland. If I am correctly informed, this ore was discovered about twelve years ago—in 1892—and was offered to British capitalists for the use of the home industry, but declined. The proposal to purchase was not taken up by Canadian capitalists until 1895, when the Nova Scotia Steel Company acquired the property for

120,000 dols. (£25,000), and began to mine about 1895, between which year and 1899 they mined some 200,000 tons. The greater part of this ore was sold to Germany and the United States, but part of it was smelted at the Nova Scotia furnaces at Ferrona and Trenton. When the construction of the works of the Dominion Company was resolved on, the Nova Scotia Company sold the greater part of the Wabana ore deposit to the promoters of that concern for a million dollars (£200,000), or eight times the sum they had themselves paid for the whole area. So long as this ore is available under its present conditions, pig-iron can be cheaply produced in Nova Scotia. The

Dining Camp at Saw Bill Mine, B.C.

ore is worked by steam shovels in open cuts or quarries, and it is about eight feet in thickness over the greater part of the deposit. It is mined only a few miles from the southern shore of the island, where it is loaded on vessels at a deep-water loading pier by up-to-date methods, and the freight to North Sydney and to Sydney* is only about 2s. per ton, so that the ore is delivered at the works of both of the two companies concerned for 5s. to 7s. per ton. As the ore assays from 48 to 54 per cent. of iron, the ore cost per ton of pig is not more than 12s. to 14s., which is a lower figure than that of any plant I know of on or near tide-water in the United States. As,

* These two separate ports are only a few miles from each other, almost at the extreme end of the Island of Cape Breton, Nova Scotia.

however, it is rich in silica, the Wabana ore has to be mixed with other ores to secure desired results, which raises the cost, according to the conditions.

In my opinion the future of the iron industry of Nova Scotia is likely to be mainly affected, not by the extent or duration of the native ores of that Province, but by the life, under existing conditions, of the Wabana ores. This is because the Nova Scotia ores have to be mined under conditions more or less akin to those of the West Coast in England, whereas the Wabana ores are quarried, like those of Bilbao, in Spain, or Mesabi, on Lake Superior. The highest estimate

TYPICAL MINING SLEEPING CAMP IN BRITISH COLUMBIA.

I have seen of the quantity of ore available at Wabana puts it at thirty-five million tons. Assuming an average annual output of half a million tons of pig-iron, this would give to the deposit a life of something like thirty-five years. But all such estimates are liable to error, and no doubt this condition is not less attached to the estimate of Wabana ores than to others. Indeed, it has been reported that the ore deposit is already showing signs of deterioration, and, at its best, an ore that assays 13 per cent. of silica and 0·835 per cent. of phosphorus is not all that could be desired.

Then, again, it is perfectly true, as Mr. Moxam has pointed out, that in order to compete for export business, Pittsburg iron and steel must get to tide-water. The district is now 460 miles from the sea

LABORATORY SAW BILL GOLD MINE.

SANDON, BRITISH COLUMBIA, GENERAL VIEW.

and it costs two dollars to get there. Sydney's tide-water, moreover, will average about 1,000 miles nearer to the world's market than that of Pittsburg.

Mr. Moxam, the first general manager of the Dominion Company's works, has been much deprecated for his original estimates of the cost of producing pig-iron at Sydney. That estimate, placed at 5½ to 6 dollars per ton, has certainly not been confirmed by practice. Nevertheless, the conditions at the Dominion Works appear to be more or less ideal, and certainly more suited to the requirements of an export trade than that of any iron-making plant in the United States. No

WEST SIDE, COLUMBIA AVENUE, ROSSLAND, BRITISH COLUMBIA.

plant in that country has raw materials at so low a cost on tide-water. Indeed, of the many steel-manufacturing plants in the United States, there are only two on tide-water—one at Sparrow's Point, Baltimore, and the other near Wilmington, Delaware. But the ore for these plants is mainly brought long distances oversea — much of it having been obtained from Wabana, and some of it from Cuba ; and neither of the two has bituminous coal within 200 miles of its furnaces, whereas, at Sydney, the coalfield, which supplies good coke, is close at hand.

Every one who has to deal with the iron trade knows the liability to more or less serious error involved in estimates of cost that have not already been realised. I have said that when I was at Sydney one of the managers of the Dominion Works informed me that it cost

THREE FORKS, BRITISH COLUMBIA—THE LOCATION OF THE GRANBY SMELTER.

NEW DENVER, BRITISH COLUMBIA, FROM THE WEST.

about 40s. to produce a ton of pig-iron, instead of the 22s. to 25s. originally estimated by Mr. Moxam. But at that time everything was dear in Canada, following the influence of the United States. Since then, labour, fuel, ores, and freights, have more or less fallen in price, and to-day the best cost may probably be taken at 30s. to 35s. per ton, made up approximately as under.

KASLO, BRITISH COLUMBIA, GENERAL VIEW, LOOKING EAST.

Estimated Minimum Cost Per Ton of Pig-iron at Sydney.

	s.	d.		s.	d.
Iron Ores, including mixtures	15	0	to	17	0
Coke	10	0	,,	12	0
Labour	2	0	,,	3	0
Incidentals	2	0	,,	3	0
Totals	29	0	,,	35	0
Bounty	12	6	...	12	6
Net figures	16	6	to	22	6

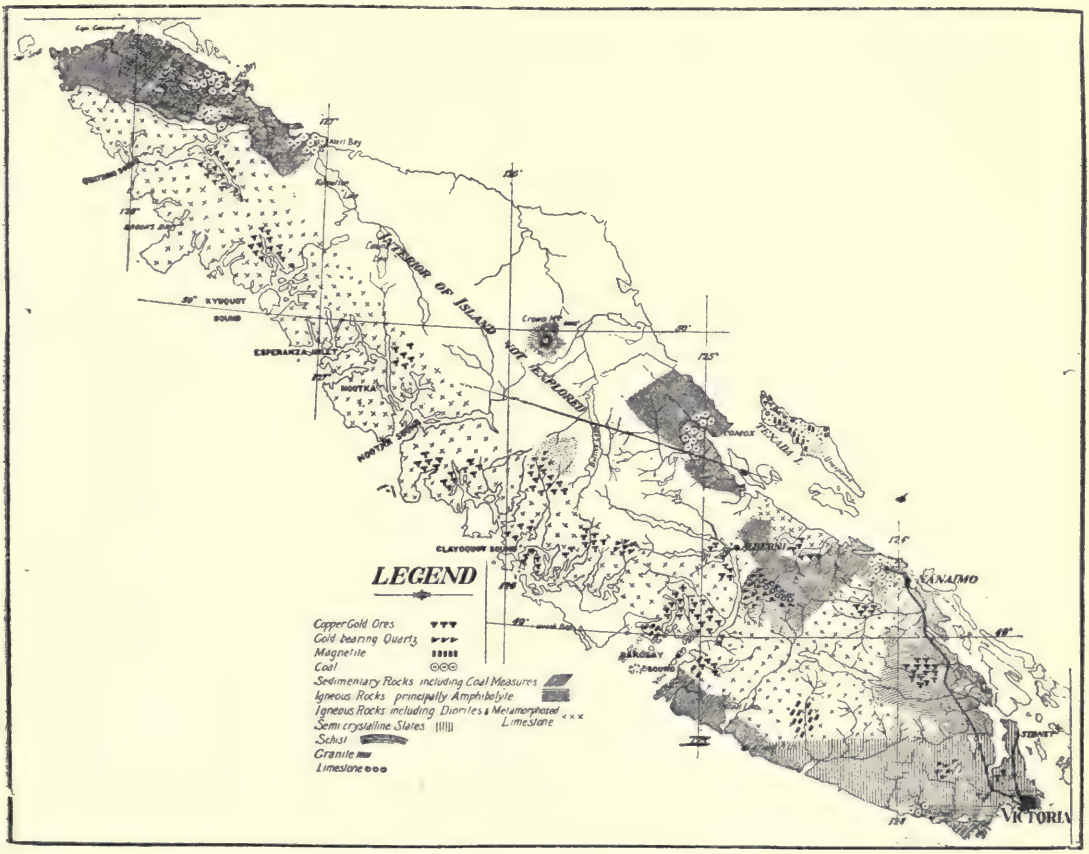
GOLD AND SILVER.

As to gold resources, this is what a recent report has to say of the Province of Ontario:—

"In Ontario gold is found in paying quantities north of Lake Ontario, where three mines have achieved decided success, in the Sud

bury country, and on Lake Superior, where, notably near Michipicoton, operations are being conducted by Americans that promise good results.

"The great gold-field of the province, however, appears to lie west of Lake Superior, and a continuation of it is found in Manitoba, as far as Lake Winnipeg. Altogether, so far as explored, it embraces a region nearly 400 miles in length, by 100 to 150 miles in width, and possesses, for quick returns from comparatively small capital, characteristics which

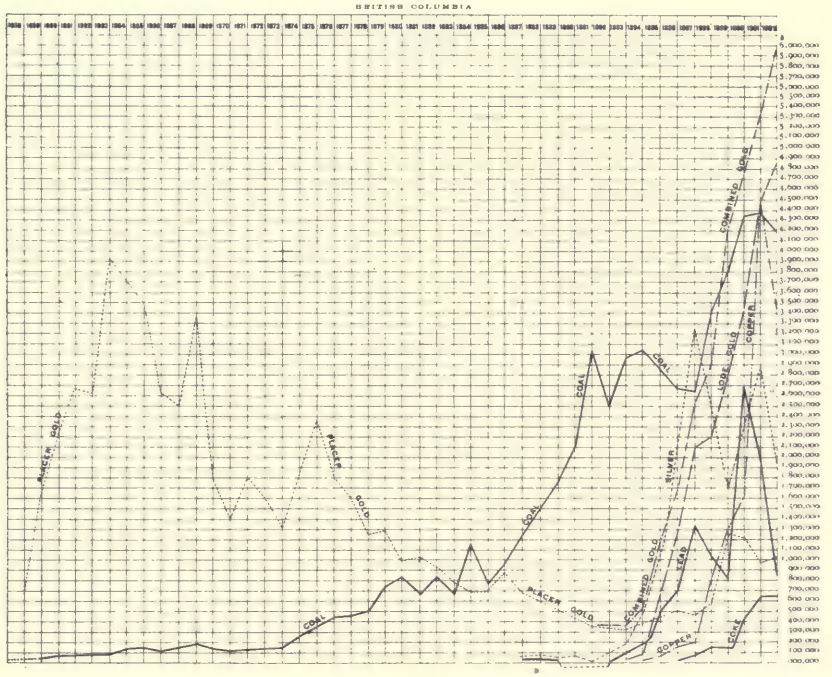


VANCOUVER ISLAND, BRITISH COLUMBIA, SHOWING MINERAL DEPOSITS.

make it superior to any other known quartz-mining region in the world. The region is crossed from east to west by the Canadian Pacific and Canadian Northern Railways, and from Rat Portage, the capital of the district, navigation by steamer extends through the Lake of the Woods, Rainy River, and waters beyond for 250 miles. The region is a maze of lakes and rivers with abundance of water-power; the land is covered by timber, excepting where the bare rock is exposed, as it frequently is to the gratification of the prospector. Almost everywhere are outcropping reefs varying from a foot to 400 feet in width, and perhaps half

of them auriferous. Volcanic disturbance is marked. The smaller veins, varying at the surface from two to six feet in width, yield 5 dols. to 16 dols. per ton in gold, though often yielding much higher values in mill tests from some of the richest portions. The abundance of great reefs, often hundreds of feet in width, yielding gold from 3 dols. to 6 dols. per ton, and minable chiefly by quarrying, is remarkable, and, in view of the records of the Homestake of Dakota and other low-grade bodies, promises an immense production at comparatively small outlay from the very surface downward as soon as sufficient capital, properly applied, is attracted to this promising feature of the Ontario gold-fields."

A recent writer has pointed out that the Western or Rocky


BRITISH COLUMBIA
PLACER GOLD
COAL
COAL
COAL

rights. In 1901, the gold and silver production of the country was valued at 65,479,940 dollars. The opportunities afforded me of seeing the working of gold mines in British Columbia generally proved that the initial expenditure was small and the methods of working rather primitive.

Copper Resources.

Reference is elsewhere made to the great wealth of the Dominion, and especially of British Columbia, in copper. There is every reason for believing that in this important metal the resources of the country are as abundant as in that of iron. But the ores in the principal centre of the industry are low grade, and do not yield the same rich returns as

Squaw Hill Phosphate Mine, Loevre River, Quebec.

those of the Calumet and Hecla mines in the United States, or even those of the principal sources of copper supply in Spain.

When I was at Grand Forks, I went over the copper smelting works of the Granby Company, and I afterwards went over their mines at Phœnix. I was there informed that the average width of the ore body at Phœnix, belonging to this Company, is about 400 ft., and that this compares with an average width of 12½ ft. at the mines belonging to the Calumet and Hecla Company, in Michigan, which I had the opportunity of visiting in 1890. This latter Company, by the way, has from first to last paid about 80 million dollars in dividends. At the

Granby Works the workmen are mainly of Scotch and Irish origin. They work eight hours per day, and their earnings per day are about 3½ dollars (14s. 7d.). The Company handles about 100,000 tons of copper ore annually.

At the successful Granby Smelter at Grand Forks, I found that there was a great deal of work being done, apparently with satisfactory commercial results. The copper ore smelted there is brought from mines situated some fifty miles away. The ore contains 2 per cent. of copper, and the matte contains about 40 per cent. of iron, which is treated as a waste product, and is not, like the cupreous pyrites imported from Spain into Great Britain, utilised for iron-making, simply because there are no blast furnaces in this region that could utilise it. The Granby Works consume about 200 tons of coke daily. The coke is carried here by rail from the Crow's Nest Pass Collieries, a distance of 600

VAN ANDA SMELTER, BRITISH COLUMBIA.

to 700 miles, at a freight of 2 dols. per ton. The Company is mainly owned by American capitalists, and the works are built in accordance with the latest American designs. The plant, as a whole, is the largest in Canada of its kind. From the mines to the smelting works is a drop of about 3,000 feet, so that the gradients are very much with the load. The ore is carried in 20-ton wagons over a private line of railway connecting the mines from the works.

Mr. Frederick Hobart, New York, in a recent article in the *Canadian Mining Review* declares that "some remarkable work has been done

in smelting the low-grade copper ores of British Columbia; but this seems to be really only a beginning, an indication of what may be done in the future. The extent of the deposits of ore and the proximity of fuel and other materials point to a much larger production in the future. There can be no doubt that a period of greater prosperity is promised for the copper smelters. The attempt to maintain the metal at abnormally high prices, and, after that policy had broken down, the effort to force a general combination of producers by depressing prices, have both proved unsuccessful. . . . There is no doubt that the present consumption of the world is fully up to production, notwithstanding recent increases. The mines and smelters which have been able to maintain their production on the basis of 11 cents (5½d.), can certainly prosper when 13 or 14 cents (6½d. to 7d.) can be realised. This condition seems likely to be maintained for some time to come; and it will not only keep existing mines at work, but will stimulate the opening of new ones, and prospecting for other deposits. Canada is already an important copper producer, and will, without doubt, improve its position in this respect during the next few years."

With this chapter I have presented a series of views of the principal mining centres in British Columbia, with the object of showing not only the surface erections at the mines, but also the general appearance of the towns near to which mining operations are carried on in that Province. A glance will show that most of the towns are located in the midst of surpassing beautiful scenery, and most of them are elevated on mountain ranges from 2,000 to 5,000 feet above sea level. One of the most charmingly situated of the mining centres is Trail Creek, but Saudon, Rossland, Three Forks, New Denver, and Kaslo are hardly inferior in the beauty of their surroundings. The principal minerals worked in or near these towns are copper, lead, and gold. Some of the mines are worked on a large and others on a small scale. Hitherto the copper properties may be said to have done better than either of the others and their future seems to be assured.

LEAD.

Lead is known to exist in Eastern Ontario in considerable quantity, though not yet mined. In British Columbia it is obtained chiefly from the silver-lead ores of the Slocan. In East Kootenay silver-lead ores are also abundant. The British Columbia production in 1902 was 22,536,331 lb., or about half as much as in the previous year. The bounty of 15 dollars a ton recently voted by Parliament is expected to greatly increase the output.

The Canadian lead industry will in future be paid Government bounty to this extent from the Federal treasury, for lead smelted in Canada, up to the extent of 500,000 dollars in any one fiscal year. But should the price of pig-lead in England exceed £12 10s. per ton of 2,240 lb. the amount of the bonus may be reduced proportionately. If at the close of any fiscal year the amount of the bonus on the output should be found to exceed 500,000 dollars, then the amount of 15 dollars per ton shall be reduced.

Comparison of United States and Canada in Mineral Output.

The production of minerals in the United States and in Canada, respectively, was, in 1901, as follows:—

	Metallic. Dollars.	Non-metallic. Dollars.	Total. Dollars.
United States ..	524,873,284 ...	567,351,996 ...	1,092,224,380
Canada	42,309,202 ...	24,403,506 ...	66,712,703

The United States produced 14 dollars 12 cents per head of its population, and Canada 12 dollars 42 cents, or 1 dollar 70 cents less than the United States. In 1891 Canada was 6 dollars per head behind. The United States increased its *per capita* production in the ten following years by 4 dollars 20 cents, and Canada increased by 8 dollars 50 cents. Of every 100 dollars of mineral production in the United States in 1901, 48 dollars 5 cents came from metallic, and 51 dollars 95 cents from non-metallic sources. In Canada the proportions were, respectively, 63 dollars 42 cents, and 36 dollars 58 cents. Ten years before, Canada's proportion of metallic production was 29 dollars in every 100 dollars. *Per capita*, the metallic production in Canada in 1901 was 7 dollars 88 cents, and in the United States 6 dollars 89 cents.

CHAPTER XVIII.

The Nickel Resources and Mines of Ontario.

Then and Now.

When I was in the United States with the Iron and Steel Institute in 1890, I received a note from the Canadian Government, asking me to consult with the Council of that body as to whether it would not be convenient to arrange for a party of the members of the Institute to visit the Dominion. It was intimated that the Canadian Government were anxious to have such a party organised as their guests, and would be pleased to provide free transportation throughout Ontario and Quebec, special mention being made of the nickel mines at Sudbury.

The invitation was accepted by about a hundred members of the Institute, and the visiting party was taken in charge by the late Dr. Selwyn, at that time Director of the Canadian Geological Survey. The members of the Institute who had taken the Northern, or Lake Superior, excursion, organised by the New York Excursion Committee, under the direction of my friend, Mr. Charles Kirchhoff, Editor of the *Iron Age*, had already been at Sudbury, as a diversion from the Sault Ste. Marie, but very few, like myself, had the opportunity of visiting that notable region twice within a month, approaching it the first time from Chicago, and the second time from Ottawa.

Since I had the opportunity of going over the Sudbury mines much has happened. The industry in 1890 was not only in a crudely undeveloped state, but it was uncertain as to its future. To-day, this uncertainty has disappeared. The uses of nickel have greatly increased in many directions, and the Sudbury ores have been found to possess constituents that enable them to contribute materially to other industrial uses. The principal industrial applications of nickel remain now as then, but the precise value of the metal as an alloy is better understood, and, speaking generally, the field in which it can be advantageously made use of has been enlarged.

Production and Prices.

The total nickel production of the world from 1840 to 1860 was about 100 to 250 tons yearly of metallic nickel; from 1860 to 1870, 600 to 700 tons yearly; from 1870 to 1889, about 1,500 tons yearly; in 1890, 2,000 tons; and in 1894, about 5,000 tons. The metal sold for 2 dols. 25 cents per pound in 1860, in 1873 to 1875 for 6 dols. to 7 dols per pound. From that time the price of nickel gradually declined, being 65 cents per pound in 1892, and fell to less than 40 cents a little

later. The high prices in 1873 to 1875 were caused by the adoption of a nickel coinage by Germany and some other European nations, causing a sudden demand which exceeded the supply.

Sudbury Nickel Interests.

Nickel ore is found in the Sudbury district over a considerable area and although it is not yet twenty years since it was worked there on anything like an important scale, the district in 1902 produced over 50 per cent. of the world's total output of nickel.

The quantity of unrefined nickel produced in 1902 in the Province

Roast Yard, Sudbury Mines.

of Ontario was computed at 11,890,000 lb., and its value at the smelter at 2,210,961 dols.

The nickel-copper (nickeliferous-pyrrhotite) region of the Province centres at Sudbury, near Lake Nipissing, and includes within its bounds an area of at least 5,000 square miles. Besides the operating mines and the properties owned by various companies, there are excellent ore bodies of large extent still in the hands of individual owners.

Since the start of the nickel industry in the Sudbury district there have been eight reduction plants operated or arranged for. These are those of the Canadian Copper Company ; the Dominion Mineral Company ; Vivian & Sons, of Swansea ; the Drury Nickel Company, which

in 1896 became the Trill Manufacturing Company ; the Great Lakes Copper Company, a Boston concern ; the Consolidated Lake Superior Company of Sault Ste. Marie ; the Mond Company, and the Nickel-Copper Company of Hamilton, Ontario. Of these the Canadian Copper Company's is the only one carried on to a large extent. This plant is drawing its ore principally from the Creighton mine, situated about eleven miles west of Sudbury on the Manitoulin and North Shore Railway, and pronounced by experts to be the greatest nickel mine in the world. At the time of the recent financial collapse at Sault Ste. Marie, the nickel reduction works of the Consolidated Lake Superior

COPPER CLIFF NICKEL-COPPER MINE ROAST YARD, SUDBURY, ONTARIO.

Company, then under construction, were nearing completion. The buildings were erected and most of the plant was on the ground. They could be put in operation in a very short space of time, and provided that suitable ore were obtainable they are said to have a capacity of dealing with 600 tons a day. The International Nickel Trust controls the bulk of the nickel interests, but so far as all-British production is concerned the works at the "Soo" are, for the present, owned and operated by Americans, and the present plans are that in its final stage the nickel should be refined on the Michigan side of the St. Mary River. In the Sudbury nickel district there are, roughly speaking, about 47 well-defined deposits, and probably 130, all told, likely looking prospects. Of these perhaps 22 may be called mines, and 25 have been prospected with some degree of success.

Quite lately new ore discoveries have been made, which have led to the preservation of a ten-mile strip on each side of the Temiskaming and Northern Ontario Railway. In the Sudbury ores 5 per cent. of nickel is reckoned rich, and the average is considerably less. But 44 per cent. nickel has been obtained from samples brought from the newly-discovered ore bodies, although a great deal of exploratory work is necessary to ascertain the ore dimensions and their commercial possibilities. There are said to be plenty of British and Canadian capitalists willing and eager to undertake this work, provided the British Government will insist on it that the contractors for the War

WORTHINGTON NICKEL-COPPER MINE, SUDBURY, ONTARIO—GENERAL VIEW.

Office and the Admiralty use only nickel of British origin and production.

In the case of the Canadian Copper Company, the chief producer of nickel and copper matte, the nickel contents of matte for one year amounted to 7,080,000 lb. of fine metal, worth 756,626 dols., and the copper contents to 6,728,000 lb., worth 319,681 dols., these values being for the unrefined matte at the smelters. Dr. Ludwig Mond has erected large works near Sudbury, to produce matte carrying a high percentage of metallic contents, and a plant for re-treating the Canadian Copper Company's matte has been erected by the Ontario Smelting Company at Copper Cliff, which also smelts ores from the latter company's mines near Massey Station.

The total quantity of nickel and copper ores raised in the Province

of Ontario ranges from 200,000 to 250,000 tons annually. There are great possibilities for this industry, owing to its unique character. New Caledonia possesses the only really competitive mines in the world.

Proposed Reservation of Nickel Property.

For some time past the Government of Ontario have had under consideration the question of withdrawing from sale or lease all or part of the known unsold nickel lands in the Province, and offering them to the Imperial Government to provide war material for the manufacture of armour plate and British guns. An Order in Council in 1902, withdrawing a belt of land 10 miles wide on each side of the Temiskaming and Northern Ontario Railway, so as to reserve the minerals, especially the nickel ores, is the first step towards making possible

Matte Yard and Smelter of the Canadian Copper Company.

British ownership of the nickel of Ontario, which is now absolutely controlled by the International Nickel Trust, a corporation having its members and headquarters in the United States.

The Hon. A. S. Hardy, Commissioner of Crown Lands, addressed to the British Government, in 1891, a communication on the nickel lands of Ontario, in which, after stating that the area over which the nickel ore had been found up to 1891 was 70 miles in length and 50 in breadth, and within this limit, known as the "Sudbury district," the Province had sold about 135,000 acres, he says :—

"It is part of the scheme of the Government that the iron ores of the Province, of which there are large deposits within easy reach of railway transport, should be utilised with the nickel ore in the production of nickel steel ; and for this purpose a sufficient quantity of

iron lands belonging to the Province could be set apart and held by the two Governments, subject to the same arrangements as might be agreed to respecting the nickel lands, and with a like provision for payment to the Province of royalty upon the ores.

"As a colony of Great Britain and a portion of the British Empire, our Province is concerned in all things which contribute to the greatness and stability of the parent State; and recognising especially how much depends on the maintenance of her historic position as a naval power, it would be agreeable to our people that the Legislature should further in any way consistent with its obligations to the Province and the people of the Province the means whereby that position may be most effectually safeguarded and preserved."

The reply of the British Government was that it was inexpedient to

DOMINION NICKEL-COPPER MINE, SUDBURY, ONTARIO—GENERAL VIEW.

hold a controlling interest in the Ontario nickel mines, and that it was better to leave them to private enterprise.

USES OF NICKEL.

Nickel is used chiefly in the production of nickel-steel, a material which has come rapidly into favour on account of its excellent qualities. Much has been written during recent years concerning this new steel. Two papers on nickel-steel were read in 1899 by R. A. Hadfield* and David H. Browne,† which contain full information on the subject.

* Proc. Inst. Civil Eng., Mar. 28th, 1899.
† Trans. Am. Inst. Mng. Eng., Sept., 1899.

Nickel-steel has many uses. Perhaps the most important use to which it is put is in the manufacture of armour and heavy ordnance, where its great strength and toughness are of much value. It has been used for engine and propeller shafts for a number of years, and has proved superior to most other steels for such purposes. Because of increase of strength or decrease of weight, it has been used for piston rods, crank pins, light forged engine frames, bolts for extreme hydraulic pressures, hydraulic forged cylinders, and railway axles; and from its peculiar resistance to fatigue under vibration it is used very successfully for piston rods in steam engines and rock drills. The United States Bureau of Ordnance have adopted Harveyised nickel-steel for armour. An idea of the quantity which is thus consumed may be gathered from the estimate that if the armour of an ordinary battleship carried 3½ per cent. nickel, nearly 75 tons of that metal would be required in its manufacture.

Nickel has a number of minor uses in the arts, of which its employment for alloys and plating may be mentioned. Considerable quantities of nickel salts are used for plating purposes; the most common of these is nickel-ammonium-sulphate. Nickel coinage has been introduced into a number of countries, including the United States, Switzerland, Belgium, Peru, Jamaica, Brazil, Chili, Germany, Japan, Mexico, Bulgaria, and the Argentine Republic.

I have already said that when I visited the nickel mines of Ontario in 1890, the nickel industry was in its infancy, and no one appeared to know even approximately its potential value. Naturally, therefore, there were rather wild ideas as to what it might do for Canada, and for the Sudbury district in particular. I have reason to know that the Canadians desired the members of the Iron and Steel Institute to visit that district, mainly in order that its value might be appraised from a metallurgical point of view. The visit was not, however, so fruitful of commercial results as they had expected. Many "propositions" were made to the visitors to acquire nickel lands, or to take up interests in the mines already in operation, but, so far as my information goes, with singularly small success. Indeed, the Canadian nickel industry had never been regarded as an El Dorado until it was taken in hand by the International Nickel Company, and by Dr. Mond, only a few years ago.

The reproductions of photographs of the nickel mines and works at Sudbury, accompanying this chapter, will give a general idea of the conditions under which the industry is carried on.

CHAPTER XIX.

Agricultural Resources and Development.

For many years it was believed in Europe that the United States had no other future than that of hewers of wood and drawers of water for older countries. It was supposed that the manifest destiny of that great country was to till the soil, in order that food-stuffs might be supplied to Great Britain in ample abundance, and this involved the kindred belief that the business of the Old Country was to supply the Americans with manufactured goods, in the production of which labour was more highly remunerated and capital was more richly rewarded. All this is now, of course, a thing of the past, and the value of the manufactured and mining products of the United States has for more than a generation greatly exceeded that of the products of agriculture.

There is some reason for the belief that this view is even now taken by many otherwise intelligent and capable men at home in thinking and speaking of Canada. Their opinion appears to be that Canada should attend to the growing of cereals and tubers, and leave the Mother Country to do all the manufacturing that may be needed. It is hardly necessary to say that the Canadians themselves do not share this belief. They are especially resentful of the idea that they should make sacrifices to admit English manufactures into the Dominion free from any Customs' duties. They emphatically return a *non possumus* to the proposal that a Zollverein—Free Trade within the Empire—should be established. To the great majority of them this seems merely to mean that Canada should leave the Mother Country to attend to manufactures and occupy herself only with the products of her agriculture, her forests, and her fisheries. The people of Canada do not so interpret their vocation and their destinies.

Agricultural Wealth.

Nevertheless, the agricultural wealth of Canada is of such paramount importance and value that any survey of the resources of the country that failed to give them a prominent place would be unworthy of attention. The immediate future of the country depends mainly on them. It is through agriculture, if at all, that the Dominion expects to become a great manufacturing nation, and agriculture is at the present time doing more than any competitive or collateral interest to attract population.

The Province of Manitoba is the most fertile and the most promising centre of agricultural operations. The area of cultivable (mostly wheat) lands in this Province is computed at 25 million acres. The area under crop is stated at only about two million acres, or less than one-twelfth part of the whole. The acreage under wheat has increased from 746,000

to 2,039,940 acres since 1890, and the total quantity of wheat produced was 14,665,000 bushels in 1890 and 53,077,000 bushels in 1902.

An impression appears to be widely entertained that the average yield of wheat in Manitoba is very much in excess of that of any other region. I have taken the trouble to analyse the returns for the fourteen years ended with 1902, and I find that the average for the whole period was 18·3 bushels per acre ; but the average was made up of considerable extremes, the minimum having been 8·90 in 1900, and the maximum 27·86 in 1895. This is a drawback which it would be imprudent to ignore. The wheat crops vary greatly, but I was told in Winnipeg that much of the land was so fertile that there was no need to complain if one year in four produced a really good crop.

The Manitoba acreage under oats has in the same interval increased from 218,000 to 725,000 acres, and the total yield from 3½ to 34½ million bushels annually. An examination of the returns of yield for the last fourteen years shows an average of 33·5 bushels per acre ; but in British Columbia, on the delta of the Fraser River, a good deal of land was pointed out to me that yielded twice this figure.

Exports of Grain.

Mr. C. N. Bell, the Secretary of the Winnipeg Grain and Produce Exchange, has recently pointed out how few persons, not excepting Canadians, fully realise the great volume of grain that is exported from Manitoba and the North-West Territories. The report of the Grain Inspector for the Winnipeg district, for the grain fiscal year ended August 30th, 1903, shows that the Winnipeg receipts of wheat for the past year greatly exceeded those of Chicago or of Duluth-Superior. The following are the figures :—

Winnipeg wheat	51,833,000 bushels.
Duluth-Superior wheat	42,406,923 ,,
Chicago wheat	37,940,953 ,,

In addition to the above, other grains were inspected at Winnipeg amounting to 4,284,000 bushels. How rapid is the increase in wheat production in Manitoba and the North-West Territories is very clearly shown by a reference to the following figures :—

Manitoba.

Wheat : Total yield—	
1889	7,507,519 bushels.
1898	25,313,745 ,,
1902	53,077,267 ,,

North-West Territories.

Wheat : Total yield –	
1898	5,542,478 bushels.
1902	13,956,850 ,,

This wheat yield is the produce of an acreage forming considerably less than 5 per cent. of the available crop area of Manitoba and the North-West Territories.

In 1891 there were 31,800 farms in Manitoba and the North-West, occupying 8,140,000 acres. In 1901 there were 54,000 farms, of 15,400,000 acres. There yet remained unoccupied 213,000,000 acres, which were equal to 758,000 farms of the same size. The area under

crop had increased from 1,421,000 acres to 3,600,000 acres, of which 1,010,000 acres were in wheat in 1891 and 2,495,000 acres in 1901. The live-stock increased as follows :—Horses, 147,700 to 305,000 ; milch cows, 120,000 to 228,000 ; other beef cattle, 343,000 to 376,000. Since 1901, 48,858 homestead entries had been made, and 158,658 settlers had entered. Based upon these figures he estimated that by 1906 there would be 970,000 souls in Manitoba and the North-West, and 1,638,000 by 1911. If the growth of the North-West, however, continued, these figures would fall far short, just as an estimate of the trade of Canada, made in 1896, based on the previous years, would have fallen 122,000,000 dollars short in respect to the years since 1896.

It has been estimated that while there were 63,310,000 bushels of wheat produced in the North-West in 1901, in 1906 there would be 70,300,000 bushels, and in 1911, 117,800,000 bushels. It will be 1908 before the New Grand Trunk Pacific Railway is built, and probably 1911 before it is in good running shape. By that time it has been anticipated that 18,824,000 bushels of barley and 81,400,000 bushels of oats additional will be produced, besides 1,240,000 horses, 925,000 milch cows, and 2,500,000 beef cattle. Of these quantities, 100,000,000 bushels of wheat will be available for export, 4,000,000 bushels of oats, and 250,000 head of cattle. This means 163,000 car-loads, or fifteen trains per day of thirty cars each every day in the year, compared with an average of four trains of thirty cars daily during the last three years.

The Young Gateway City of the Great West.

A great part of the wheat produced in Manitoba is consigned to Fort William, either to be stored in the immense elevators there provided, or to be forwarded by water to its ultimate destination in the East, in the United States, or in Europe. Fort William is situated on a level plateau of land at the mouths of the Kaministikwia, Mission, McKellar, Neebing and McIntyre rivers, all of which are now or easily can be made accessible for the navigation of the largest vessels afloat on the Upper Lakes. It has over 25 miles of dockage facilities, with 22 feet of water, six miles of which are now occupied by the Canadian Pacific Railway and the Canadian Northern Railway Company, the balance being available for railway and other purposes. About two miles of this balance have been set apart for the Grand Trunk Pacific. The population is 6,500 ; the taxable assessment 2,000,000 dollars ; the Canadian Pacific Railway and other exemptions 2,000,000 dollars. The town owns and successfully operates a complete system of waterworks, electric light and telephones.

Butter and Cheese.

Since 1894 Colonial cheese imports—mainly from Canada—have increased by over 33,000 tons, and foreign have diminished by 13,400 tons. Cheese, however, as an article of diet is not held in such favour as formerly, and consequently the same relative increase in the total imports of cheese, as in butter, cannot be expected. Since the year 1894 the total imports of cheese have risen from 109,280 tons to 129,599 tons, an increase of nearly 20,000 tons ; while those of butter for the same period have grown from 123,054 tons to 200,186 tons, an augmentation of over 77,000 tons, or a growth nearly four times greater than that of cheese.

In 1890 Canada sent 53,643 tons of cheese to the Old Country, and this increased until the year ended June 30th last, when the record quantity of 87,883 tons was sent. This is nearly forty times as large as the amount sent from New Zealand, the only other Colony to export cheese, and more than double the amount received from all other sources, the total of which reached 41,716 tons. Never before have the quality and condition of Canadian cheese been so high as during the last season, and the extraordinary high prices received—the highest since 1894—were in no small degree due to this circumstance.

Appended is a list of the countries exporting butter to Great Britain in the order of their prominence, and the amounts they exported during the last season :—

	Tons.		Tons.
Denmark	88,903	Norway	1,109
Russia	22,180	AUSTRALIA	1,053
France	22,065	Germany	768
Holland	19,324	Other countries	110
CANADA	13,238		
Sweden	10,376		200,186
NEW ZEALAND ...	9,575		
Belgium	4,205	Total Colonial	23,866
Argentina	4,190	Total Foreign	176,320
United States	2,490		

There are only three countries that are now exporting less butter to Great Britain than they did ten years ago. In the case of Australia this is due to the exceptionally long drought which has prevailed generally for the past eight seasons, and which has made the yearly amounts exported to Great Britain very irregular. The maximum export was reached in 1900, when it totalled 17,207 tons. The drastic effect of the drought can be seen when the figure for 1900 is compared with that for the last season—1,053 tons. Happily this great drought, which has lasted with more or less persistency since 1895, has completely broken up, and there now appears to be excellent reasons to hope for a succession of fertile years.

Great importance is now attached to the dairying industry of the Dominion. The first creamery in Manitoba was established fourteen years ago, and the industry has been aided by Government during the past seven years. In that period it has rapidly advanced, the total value of dairy products in the Province being increased from £7,000 in 1894 to £167,600 last year. At Winnipeg there is a Government dairy school, at which residents of the Province and of the Territories receive free instruction. In the Territories, also, dairying is being rapidly fostered by a system of Government creameries.

Experimental Farms.

At Brandon we visited the Government experimental farm of the Province of Manitoba. These Government experimental farms are established in each of the different Provinces. At these stations experiments are conducted in the treatment of soils, raising different varieties of grains, fruits, trees, and other produce. The results obtained are accessible to everybody. Costly experiments on the part of the individual farmer are thus unnecessary, and the influence of these

valuable aids in the development of scientific agriculture is already apparent in many parts of Western Canada.

Throughout a large part of our journey our route lay between fields of heavy waving grain fast ripening for the harvest, betokening the general prosperity of the district. The appearance of the farm-houses except in few cases, was, however, disappointing; the prevalence of the log-cabin order of architecture indicating an absence of taste and even, one might suppose, of comfort wholly at variance with British notions of a successful agriculturist.

Limits of Profitable Cultivation.

Until recently it was generally supposed that the limit of profitable cultivation would be found at no great distance north—that, in fact, mid-Canada was practically a narrow strip of inhabitable land stretched

Flour Milling Plant, Keewatin, Ontario.

along the northern border of the United States. It is now found that the lands several hundred miles north of the boundary are more fertile than those immediately about it. The "chinook" winds are also more prevalent. These winds seem to eat up the snow. In consequence the winter climate is more temperate, while the longer days in summer cause the harvest to ripen with great rapidity.

In the United States farms have risen greatly in value, and but little suitable land is left unoccupied. Many of the most enterprising agriculturists are selling their American farms at high prices and coming into the Territories, where land can still be had in some localities at from £1 to £2 an acre. For at least twenty miles on each side of the Calgary and Edmonton Railway the best land is already taken up, while far north of Edmonton, towards the Peace River, an equally rich country is only waiting for railway development. I asked one of the most experienced of Canadian authorities what district he would select for settlement if he came into the country as a settler. He named the Peace River, partly because as yet land is still very

cheap there. But it will not long remain so. The line which is to run directly from Winnipeg to Edmonton, and thus form the hypotheneuse of the great triangle, which has Winnipeg, Calgary, and Edmonton at its angles, is under construction. It is likely to be extended to the west, probably through the Yellowhead Pass to the Pacific Coast of British Columbia, at a point as far north as the recent Alaskan Boundary decision permits. Thus not only will a larger tract be opened up for settlement, but the Territories will be connected with British Columbia by a two-fold instead of a single line of communication.*

The Reports on the Crown Lands Surveys made during the last twenty years by Survey officers, speak of many localities in British Columbia where the resources for agricultural development are exceptionally good, of magnificent forest areas, of numerous water powers, of a generally fertile soil, and of other natural advantages. These reports are well deserving of the serious attention of those who may entertain the idea of assisting in the early development of Canadian resources. Many of the localities indicated are as yet without railway communication, but that is sure to come, and when it has been secured, the properties now all but going a-begging are likely to have a greatly appreciated value.

Tobacco Culture.

In 1901 there were 2,935 acres of land under tobacco in Ontario, producing nearly 3¼ million lb. of leaf tobacco. In 1903 in two counties alone—Essex and Kent—fully 5,000 acres were under tobacco culture, and a total crop of 6,000,000 lb. was anticipated. Tobacco is also cultivated in the Province of Quebec, in the district north of Montreal, and in the County of Joliette. Authorities believe that there is great room for expansion in the cultivation of Canadian tobacco.

Lands for Sale.

In a single advertisement page of a Dominion newspaper, I find advertised for sale 14 million acres of land in Manitoba and the North-West Territories belonging to the Canadian Pacific Railway; over one million acres in the Saskatchewan Valley, owned by a land company with a capital of 3½ million dols.; and a vast territory owned by the Hudson Bay Company in Manitoba and the North-West Territories, "on easy terms of payment, and without any conditions of settlement or cultivation duties." I also find the announcement that the Crown Domain of the Province of Ontario contains an area of over 100 million acres, containing large quantities of minerals, which may be acquired by freehold titles or leased on working conditions.

The total area of lands "set out for settlement" in the Dominion up to the present time has been about 86 million acres, representing over 537,000 farms of 160 acres each. The total number of entries of such farms—that is to say, land actually settled—in 1902 was 22,215, or nearly 2½ times the number recorded for 1901, while the total number of souls represented by these entries was 64,968, against 28,034.

* *Vide* Chapter XXVIII., *ante*.

The Eastern Provinces and the North-West.

It has been said that the Eastern Provinces of Canada buy almost nothing from Manitoba and the North-West. It is replied—If this is true, what became of all the grain produced in the North-West in 1902? The grain production of the Canadian North-West in 1902 was 67,034,117 bushels of wheat, 45,139,455 bushels of oats, and 13,718,000 bushels of barley, a total of 124,891,572 bushels of grain. The total exports of grain from all Canada were 26,117,530 bushels of wheat, 5,030,123 bushels of oats, and 457,117 bushels of barley. There were also exported 1,086,648 barrels of flour, equivalent to about 4,890,000 bushels of wheat. Thus the total exports of grain and flour from all Canada were equal to about 36,494,770 bushels. A considerable part of the wheat, oats, barley and flour exported were produced in Ontario and Quebec, but even if the total Canadian exports of grain and flour were credited to the North-West they would represent less than one-third of the grain production of the Canadian North-West. Of course a portion of the grain crop is consumed in the North-West and British Columbia, but it is stated to be well within the mark to say that at least one-half the grain produced in the Canadian North-West is consumed in Eastern Canada, and every extension of manufacturing industries in Eastern Canada will increase the home demand.

An American Tribute.

The *Philadelphia Post* in August, 1903, made the following remarks:—"This North-West is rapidly filling up with a new life from Eastern Canada and from our own North-West. Farmers in Iowa, Kansas, Nebraska, Minnesota, and the Dakotas are selling their valuable farms and are moving, with their families and farming implements and live-stock, up into this great harvest-field, and are receiving a most generous welcome. American capital has gone in there and bought up great tracts of land, and large profits have already been made by the pushing, wide-awake Americans. But the brave and enterprising young men of Western Canada show a most noble and generous spirit. It is truly wonderful. They see our people making millions of money there in the last three years, but they say: 'We welcome you; we need your money; we need your enterprise, your daring, your experience; come in and help us develop this great Empire!' No one in all the world, England not excepted, receives the broad and generous welcome from the Canadian North-West that is so cheerfully and unselfishly given the American farmer, merchant, manufacturer and capitalist. They wish us to settle down and live with them and work with them. But to the capitalist, or the land speculator, many in this great North-West, one big and broad enough to say: 'Even though you come in to skim off the cream, and then perhaps leave us, still we welcome you. You are crowding our lands in the market; you are feeding the streams of immigration pouring in upon us; you are helping to develop our country. We welcome you.' It is a wonderful spirit and courage, this, and Western Canada is charged full of a great New World electric life."

A writer in *The Times* of September 8th, 1903, pointed out that "the great North-West region, which only a few short years ago was a barren waste, the hunting-ground of the trapper, last year produced 67 million bushels of wheat and 50 million bushels of grain. The possibilities of the future I cannot estimate, but this year the Canadian Pacific Railway alone sold to immigrants and cultivators 2,639,000 acres. Over and above this vast territory probably as great an extent was disposed of by private owners and the Government; and in 1902 and the first seven months of 1903 more than 158,000 immigrants came into the country."

Some Agricultural Rivals of Canada.

Three countries on the earth's surface appear to have a future fraught with great possibilities in the increased production of foodstuffs. One of these is Siberia, another is India, and the third is the Dominion of Canada. It is possible that in the future these three countries will be keen competitors with each other for the world's markets. Siberia has the greatest area, India the greatest population, and the Dominion the greatest chances of immediate development, and the best facilities of access to the markets of Europe. It is worth while to compare the conditions and the prospects of these rival wheat-growing nations.

Russia.

The construction of the Trans-Siberian Railway has given that vast country much better opportunities of development and of access to the outside world than it had before that great project was undertaken. Russian administrators are alive to the commercial value of the country, and are now holding out inducements that Siberia may be speedily peopled. At every station on the Siberian Railway is the big steaming "samovar," so that hot water may be obtained for tea-drinking, a big chest of medical appliances, and an official who must know how to render first aid to the injured. Food for children, sick persons and the indigent may be got free. Other immigrants buy their food at cost price. On arriving at their destination the immigrants will receive seed from the Government for next to nothing. Tools may be bought on easy terms.

A recent writer declares that "nowhere in the United States—and Siberia is frequently alluded to as the New America—have I seen such an expanse of magnificent agricultural land waiting for man and his plough. And yet there is small prospect for generations to come that Siberia through Russian farmers will give of its teeming abundance to the rest of the world. The fact is the Russian is one of the worst farmers on the face of the earth. It is probably the strong strain of Tartar in him that makes him indolent."

A Russian who desires to proceed to Siberia must get permission from the authorities. The permission is necessary, for land has to be allotted, and arrangements made for State officials to conduct the parties. For the first three years no emigrant is called upon to pay taxes. In western Siberia a grant of some 32 English square miles is made to every man, and in some cases there is an additional grant of

six miles of forest. In central Siberia the extent of the grant is determined by the quality of the land.

As the settlers are practically State tenants, sale and mortgage of land are forbidden. If an immigrant has a little money, and wants to purchase a particular strip, he can do so on easy terms. Near the large towns the cost for a square verst (a verst is about two-thirds of a mile) ranges from 10s. to 12s., while in other places good land can be bought for 6s. a verst. The buyer must deposit half the sum in the local treasury. This ensures the delivery of the land for three years' use or profit. Full proprietorship is obtained by the buyer spending, on plant and working, a sum not less than twice the cost of allotment. From 1893 to last year 18,900,000 acres of State land in western Siberia were thus settled.

India.

India grows more food grain than it requires to the extent of five million tons, or 100 million cwts. This could be increased, and will be increased, as works of irrigation progress. In ordinary years rice is exported to the extent of 35,000,000 cwts. a year. Wheat can also be grown for export on a larger scale. In 1881 the value of wheat exported was £5,746,000. In 1901 this had risen to £9,587,000, which was the highest amount ever reached. The famine of recent years has caused a decrease on these figures.

During the last ten years Indian crop areas have increased from 221 to 229 million acres, foreign sea-borne trade has risen in value from 130½ to 163¾ millions sterling, coasting trade from 48½ to 63 millions, and foreign trade by land from five and a half to nine millions. In cotton mills the number of operatives has risen from 118,000 to 178,000; in jute mills from 65,000 to 114,000, and in coal mines from 35,000 to 95,000. Natives employed on the railways have increased in number from 248,000 to 357,000. Joint stock companies have increased from 950 to 1,366, banking capital from 9 to 14¾ millions, and postal savings' deposits from four and three-quarters to seven and a half millions. These figures point to the fact that India is on the threshold of a remarkable period of prosperity after the terrible misfortunes of recent years, and if this continues, the consumption of wheat at home is likely to materially increase, although, as is well known, the rank and file of the people of India do not use much wheat.

The Climate of Canada.

Climate is one of the conditions on which agriculture depends. Canada, from its vast extent, has been truly said to "possess all the climates of Europe, from the Mediterranean to the Arctic Ocean, as might be expected, seeing that it extends from the latitude of Rome, in Italy, to that of the North Cape, in Norway, and is of almost equal area." The Gulf Stream, in the Atlantic, and the Japanese current in the Pacific, are both singularly favourable to Canada. In the Province of British Columbia the thermometer in the summer months ranges from eighty degrees to ninety degrees, while in winter the cold rarely goes below twenty-two degrees. On the Atlantic, the climate of Nova Scotia and New Brunswick is in no respect less

desirable in winter than that of Massachusetts and Maine. St. John the chief city of New Brunswick, is in the latitude of Milan, Lyons, and Venice, and the whole Province is within parallels which include Belgium, Holland, and the German Empire, where populations are most dense. In Ontario, the climatic conditions created by the practical encirclement of the Great Lakes are especially favourable, and such stretches as are included in the Niagara Peninsula, and those bordering upon Lake Erie, force themselves upon the attention of the student of North America as among the most favoured spots on the continent. Canada possesses a climate which, in its variety, favours the production of numerous cereals and crops, and in its exhilarating qualities, stimulates the best efforts of its population. Malte Brun

City Hall, Winnipeg.

said of these regions: "Everything is in proper keeping for the development of the combined physical and mental energies of man. There are to be found at once the hardihood of character which conquers difficulties, the climate which stimulates exertion, and the natural advantages which reward enterprise. Nature has marked out this country for exalted destinies!"*

The Tennessee Valley, in the State of New York, was once the great wheat-producing region of North America. So much so was this the case that Rochester was named the "Flour City," from the number of its flouring mills. Since then things have changed. The wheat-growing areas of the continent tend towards the North Pole. An explanation

* *North American Review*, January, 1889.

of this fact is that climate is more the result of altitude than it is of latitude. According to Humboldt, Europe has a mean elevation of 671 feet, and North America a mean elevation of 748 feet. The Canadian portion of North America has an average altitude of only 300 feet. In the extreme north-west of Canada the falling off from the height of land towards the vast body of water known as Hudson's Bay is shown in the fact that from even within the Minnesota line the rivers all begin to run towards the north. This low altitude is singularly favourable to Canada. Indeed the mean temperature of Hudson Bay is stated to be three degrees warmer during the winter than that of Lake Superior. Nevertheless, it is on the southern and western shores of Lake Superior that the most important development of American enterprises has taken place—developments that have yielded in lumber, in iron, and in copper, some of the greatest fortunes of the country, and within parallels of latitude included in this lake a remarkable agricultural development has taken place.

Britain's Present Foodstuffs.

In the course of the debates of the Congress of Chambers of Commerce of the Empire at Montreal, in August last, repeated references were made to the fact that it was not quite a satisfactory condition of affairs that left this country pretty much at the caprice of the United States in so fundamental a matter as its food supplies. Complaint was made that the British Government was not sufficiently alive to the dangers and risks involved in this condition of things. The Canadians are more especially interested in this matter, because they believe that with proper encouragement, they could themselves, within a few years, practically meet the wheat requirements of the Mother Country. In 1902, we imported about 81 million cwts. of this breadstuff, of which the Colonies—mainly Canada—supplied about 22½ million cwts., leaving 58¼ million cwts. to be furnished by foreign countries. The next most important of our imported breadstuffs is barley, which the Colonies do not supply at all, and the third place is taken by oats, of which in 1902 our Colonies only furnished about a thirtieth part of our total volume of imports. There remain the categories of peas, beans, and rice. So far as the last-named is concerned, we draw about two-thirds of our total supply from India, and the Colonies furnish a larger part of our imports of peas than foreign countries—the only case of the kind except that of rice, already named. Taken as a whole, the proportion of our imports of breadstuffs supplied in 1902 by the Colonies was 22 per cent., leaving 78 per cent. to be furnished by foreign countries.

With this chapter is presented an illustration of the great flour-milling plant at Keewatin, which I was privileged to see, a plant with a capacity of 4,000 barrels of flour per day, and a wheat storage of 600,000 bushels. The Town Hall of Winnipeg—that city of mushroom growth and towering ambition—is also shown. Of Winnipeg one can only say that it appears to fully equal any "boom" city on the other side of the line in the bounding prosperity that has in a few years raised it to the rank of one of the first communities in the Dominion, and made it the capital of what is to-day, and is likely to remain, the greatest industry of the country.

CHAPTER XX.

Water-Power Resources.

When Boulton was asked what he produced at the historical engineering works which, in conjunction with James Watt, he established in the Midlands, he replied : " Power ; the one thing that all the world wants." The means for the supply of power are exceptionally ample in the Dominion. From the flood that pours over the cataract of Niagara at the rate of 90,000 millions of cubic feet of water every hour, supplied by the great American lakes—whose

SHAWINIGAN FALLS, QUEBEC.
(The greatest rival to Niagara on he American Continent.)

area is estimated to contain one-half of all the fresh-water on the earth's surface—to the illimitable and unmeasured smaller sources of similar energy scattered up and down the surface of the country, Canada can probably produce cheap water-power in greater variety and on a larger scale than any other country. This provides Canada with a not unimportant equivalent for the resources in petroleum and natural gas

that belong to her neighbour on the other side of the line. There is no natural feature of Canada that is, on the whole, more striking than this one. It is not only here and there that it comes in evidence; but it appears to prevail everywhere, from the remotest corner of the vaporous and befogged Province of Nova Scotia, to the extremest point of British Columbia on the Pacific. Some day, no doubt, a worthy record will be made of the splendid water-power capabilities of the Dominion. In the meantime, we can only undertake to indicate roughly some of their leading features.

Niagara Falls and other Ontario Powers.

It is generally known that the Dominion has a partnership interest in this wonderful cataract, but hitherto she has been more or less a sleeping partner in the Falls. It will be recollected that the Niagara River flows out of Lake Erie at Buffalo, that the Falls are about 20 miles north of that city, and that the whole descent of the river between Lake Erie and Lake Ontario is 333 feet. The Falls are 158 feet high on the Canadian side and 164 feet on the smaller cataract on the American side, Goat Island separating them. Above the Falls there are rapids for about one mile, descending in that distance 52 feet, while the rapids below the Falls descend 104 feet. Counting the Falls and the upper rapids there is a head of water of 210 feet above the Niagara village, which the Construction Company has undertaken to make available for American industries.

The first efforts made to utilise the powers of Niagara came from the United States, which, in 1890, established the "Cataract Construction Company."

The water was taken from the Niagara River at a point where the stream is calm and navigable, about a mile and a half above the Falls. The Company acquired 1,000 acres adjacent to the river, to be utilised for factories erected to use the power. The supply canal which taps the river is 100 feet wide, and has 12 feet depth of water. This canal conducts the water to the sites of the mills and power stations, where perpendicular shafts are sunk some 150 to 170 feet deep through the rock. The main tunnel is over 7,000 feet long, and the interior is 19 feet wide and 21 feet high, with a cross-section of 386 square feet. This tunnel carries off the water with about 70 feet gradient, and it carries enough water to develop at the wheels at least 100,000 horse-power, which is perhaps the greatest water-power ever controlled. The total power available at Niagara Falls is, however, estimated by American engineers at about five and a half millions horse-power.

There are now two American (United States) companies in operation, and three Canadian companies, as follows:—The American Niagara Falls Power Company (U.S.A.), about 300,000 horse-power; the Niagara Falls Hydraulic Company (U.S.A.), about 300,000 horse-power; the Canadian Niagara Power Company, 100,000 horse-power; the Toronto and Niagara Power Company, 125,000 horse-power; the Ontario Power Company, 150,000 horse-power; total, 675,000 horse-power, which is only 12¼ per cent. of the total estimated power.

There are stated to be some desirable sites for plants still available on the Canadian side within the limits of the Government Park, the aggregate energy of which is declared to approximate 350,000 horse-power.

A guess at the Ontario consumption within the limits of practicable transmission cannot be hazarded, but by common consent the 675,000 horse-power already in process of development by the three Canadian corporations is considerably in excess of all demands for many years to come. The fact that the city of Toronto, with all its lighting, electric railway, and manufacturing demands upon power, consumes only in the region of 30,000 horse-power is a partial index to the margin between consumption and development.

Lynx Head Falls, Seine River.

Reference is made elsewhere* to the great importance of the water-power made available at the Sault Ste. Marie, in Ontario, by the fall of the waters of Lake Superior into the St. Mary River. The existence of the power so created was the origin of the great enterprise of the Consolidated Copper Company, which has of late had so chequered a career. The amount of power made available by the fall of twenty feet at this point must be very large, and the "Soo" industries already organised will no doubt be able to utilise a good deal of it.

* *Vide* Chapter n "The Canadian Soo."

Quebec Water-Powers.

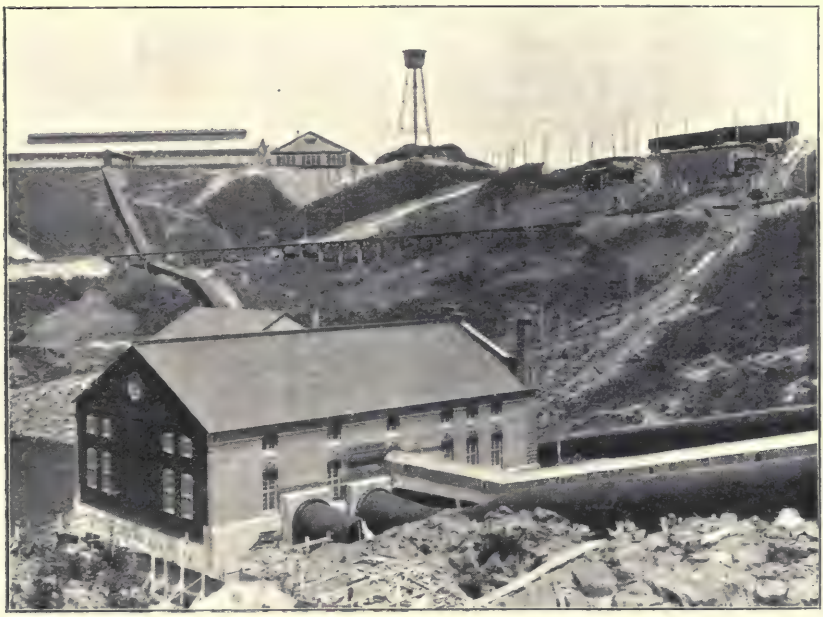
Water-powers are very numerous in the Province of Quebec, some capable of developing a force of from 25,000 to 75,000 horse-power, while several exceed 400,000. The great fall of the Hamilton River, 250 miles from the sea coast, is 302 feet high, and, regard being had to the volume of the river's waters at this point, it has been calculated that this fall alone is capable of producing more than one million horse-power, which, however, is probably a good deal overstated.

The greatest application of water-power in this Province up to the present time is that at Shawinigan Falls, where a Montreal company began operations in 1899, and in 1901 had practically completed the first great instalment of the proposed development of 100,000 horse-power. This installation supplies Montreal, which is above 80 miles distant, with power which can be sold at 15 dols. per horse-power per annum, and, it is expected, will be able to considerably reduce this cost. I had the opportunity afforded me of inspecting this large enterprise, and of seeing over some of the mills and factories which have been built close by for the purpose of utilising the power provided. These include very large pulp-mills, aluminium works, a cotton mill, and works for the manufacture of calcium carbide. There is said to be "an immediate prospect of many more" enterprises of the same kind. The present canals and works are laid out for the use of 75,000 horse-power, and the plans call for a further supply of 25,000 horse-power. The Shawinigan Company were in 1903 building their pole line for the transmission of the electric current to Montreal, where it is claimed that they will "deliver the cheapest light, heat, and power from the largest power plant in the world with the single exception of Niagara." In providing the power-plant, a canal was built, which is 1,000 feet long by 100 feet wide, and 20 feet deep. It was excavated out of solid rock. The penstocks are each 500 feet long, and are made of iron plates $\frac{5}{16}$ inch to $\frac{7}{16}$ inch thick. Each pipe is 9 feet diameter, and carries down sufficient water to produce 5,000 horse-power in the power-house below. The water-wheels in the power-house are each of 6,000 horse-power capacity, and are said to be the largest hitherto constructed.

Probably very few of the many who have visited Montreal have failed to take advantage of the opportunities afforded for shooting the Lachine Rapids on the St. Lawrence, two or three miles distant from that city. It must have occurred to nearly all that here a large source of power was running to waste. It was long ago proposed to utilise some of the great power that was here lost in the rapids so conveniently situated close to the city boundaries. After several minor attempts had been made to seize upon part of the energy going to waste, a company was formed which proposed to develop, by means of a wing dam and a dam perpendicular to the northern shore of the river, a considerable amount of power to be utilised by mills and factories directly on the site, or within a radius of a few hundred yards, the power being transmitted by line shafts or wire-rope systems. This project languished until the success attending power transmission by electricity gave new life to it. It was then taken in hand by a company of

sufficient financial strength, and the project has been realised on a scale of importance.

The Lachine power development scheme has its centre opposite that town, where the river is divided by a long narrow island into two channels, in both of which the flow is exceedingly rapid, under a fall averaging 20 to 25 feet per mile. The two streams, taken together, are known as the Lachine Rapids. It is in the smaller or northern of the two streams that the power development has been made. Parallel with the shore there has been erected a dam about one mile long. In the channel formed between this long dam and the shore, the distance, between the two being about 1,000 feet, the channel has been deepened,



Power-House and Aluminium Works at Shawinigan Falls, Quebec.

and across the canal thus formed is built a solid masonry dam, upon which is located the power-house. The total available fall varies up to about 16 feet, and necessarily a very large amount of water is required to develop the great power produced by the 72 turbines of the installation. The forebay or upper part of the canal, formed by the two dams and the shore, is about 4,000 feet long, 1,000 feet wide, and 13 feet deep, and through it the velocity of the water under the full draught of all the wheels is two feet per second.

The turbine wheels are 72 in number, each developing nominally, with 14 feet head, about 300 horse-power, so that the total energy generated is about 21,600 horse-power. The power-house is a brick and steel structure, about 1,000 feet long. The transmission line and sub-stations are well laid out.

British Columbia.

We may now journey through Canada some three thousand miles, and take note of another interesting power installation at Vancouver, on the Pacific. Here we have a community that could hardly be said to have any existence twenty years ago, carrying out one of the most daring and costly water-power projects of to-day.

The British Columbia Electric Railway Company, Limited, of Vancouver, owns and operates the electric street railways in Westminster, Vancouver, and Victoria, and the inter-urban line between Westminster and Vancouver—one of the longest and best equipped electric roads in Canada. The Company also supplies power for factory and other purposes in all three cities, and furnishes all the civic, commercial and domestic lighting in Vancouver, and the commercial and domestic lighting in Victoria. It operates a 5,000 horse-power water-plant for the Victoria services, and is now installing a 30,000 horse-power plant for Westminster and Vancouver. This latter scheme entails the tunnelling of a 5,000-feet mountain for a distance of two and a half miles.

Primarily the installation of the new power-plant is for the purpose of furnishing light and power for operating the street railways in New Westminster and Vancouver, and the inter-urban railway between New Westminster and Vancouver. The initial installation of machinery is equal to the generation of 9,000 horse-power.

The sources of water supply for power are two very deep glacial lakes, known as Coquitlam and Trout, or Lake Beautiful. The first-mentioned lake has an area of 2,300 acres, and it is at an elevation of 32 feet above the latter, which has an area of 460 acres. Both lakes are surrounded to their outlets by rugged mountains rising abruptly from the shore lines, and, between the two towers, by a granite range 4,000 feet above water level. It is through this range that a tunnel of 13,000 feet is being driven to connect the two lakes for the purpose of using the stored waters of Coquitlam for the main supply, and Trout Lake as a balancing reservoir.

As Trout Lake acts in this capacity the tunnel required is only large enough for the average, instead of the peak, load. Depreciation and maintenance costs on the hydraulic system are expected to be exceedingly low, and the service to be obtained is likely to be very reliable. Both lakes will be controlled by dams at their outlets, and from the dam at Trout Lake steel pipe lines will convey the water under an effective head of 390 feet to the power station, located just above high-tide-mark on the shore of the north arm of Burrand Inlet, into which the water wheels will discharge. The dam at the outlet of Coquitlam Lake will raise the water 12 feet above low-water level.

The water-wheel equipment consists of three sets of Pelton impulse wheels, each set capable of developing a maximum of 3,000 horse-power at 200 revolutions per minute, under the effective head of 390 feet, and one set consisting of 200 horse-power wheels for driving the exciters at 580 revolutions per minute. Each of the main units

consists of two overhung wheels, one mounted on each end of the shaft of a 1,500-kilowatts Westinghouse engine type rotating field generator. The wheel centres are of the steel disc type, and are fitted with cast steel buckets, secured to the wheel rims by turned steel bolts driven in reamed holes. The hubs of the wheel centres are bored out for a press fitted on a shaft 12 inches in diameter, and will be pressed on in place at the power station. Each wheel will be enclosed in a cast-iron housing, and provided with centrifugal discs and pockets, and suitable drain pipes for preventing leakage of water along the shaft.

Herb Lake Rapid into Grass River.

The Cape Breton Natural Water-Powers.

Mr. Tower, a well-known hydraulic engineer, recently reported on the available water-powers of Cape Breton, and computed there was 12,850 horse-power net in the three rivers of Victoria County, viz. :— "Indian," "Barosois," and "North." This power could, he said, be transmitted electrically, and assembled at the mouth of any of these rivers, where he reports facilities for pulp and paper mills.

On the main Margaree, Inverness County, he reports a fall of 189 feet in sixteen miles from Lake Ainslie to the sea, affording 65 horse-power to the foot, or 12,285 horse-power to be made available by piping. On the north-east Margaree, three miles from the proposed mill site,

there is a fall and a horse-power of 1,400 gross to be transmitted electrically.

Ontario.

In Ontario, there are as numerous water-powers as in any other part of the Dominion, some of them of great importance. Some authorities have hoped great things from the utilisation of the Kakabeka Falls, sixteen miles from Fort William. A contract was recently closed with a company, of which Mr. Clergue, of Sault Ste. Marie, was one of the principal parties, to develop this power. When I was at Fort William in September, it was announced that the enterprise was to be started in three weeks, and that 1,000,000 dols. was to be expended in the development of 300,000 horse-power. The company guaranteed to deliver 6,000 horse-power in Fort William within eighteen months, at 18 dols. per horse-power. With its unexcelled shipping facilities, and power selling at any such price, a great future is likely to lie before Fort William as a manufacturing centre.

Manitoba.

Winnipeg looks forward to becoming a great industrial centre through its facilities for cheap power. Several important power-producing enterprises have already been started, and the price of energy now offered is very much lower than that stated some two or three years ago. The Great Falls Company, when I was in Winnipeg, was negotiating with the city to take 2,500 horse-power, and the Winnipeg Power Company offered something less than 500. Another company—the Lac du Bonnet—wanted for their plant, when completed, 1,500,000 dols. cash, and it was claimed to be equal to supplying 10,000 horse-power. In September, 1903, I learned that many small consumers in Winnipeg were paying over 100 dols. per annum per horse-power, and larger consumers were in this respect little better off. Fuel was so dear that it was contended that power could not be delivered at any less cost and yield a profit. Relief was therefore naturally sought in harnessing such natural powers as are within reach of the city.

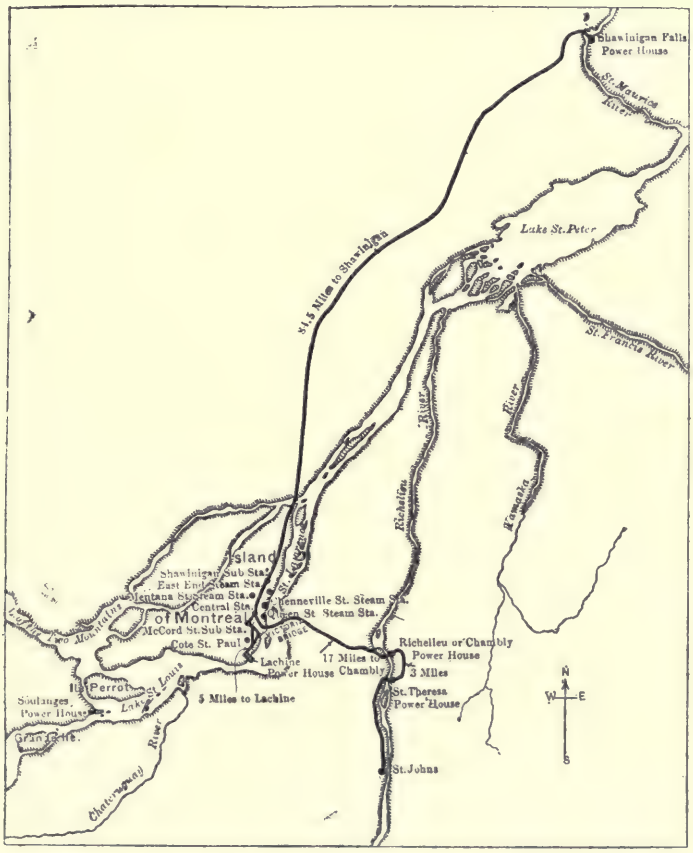
Cost of Water-Powers.

Under an Act of last Session, adopted by the Dominion Parliament, municipalities, singly and jointly, are permitted:—

"To secure the acquisition, construction, maintenance and operation, of all necessary works, plant, and machinery, and appliances for the development, generation, transmission, transformation, distribution, and supply of electrical and other power and energy, including heat and light for their own corporate use . . . and for the use of such persons, firms, and corporations as may desire the same."

Some of the municipalities are now taking advantage of this Act, and others are invited to do so, in view of the great unutilised surplus of power at Niagara.

A recent Commission has been enquiring into this question, known as the Municipal Power Commission. Its report, which has lately been published,* states that electric-power is leased at rates ranging from 20 dols. per horse-power per annum for a few hours daily, up to special rates for small consumers, running as high as 100 dols. and upwards per horse-power per annum. Probably the most economical steam-power plant in Ontario costs, after allowing for all proper elements therein, not less than 28 dols. to 30 dols. per horse-power



MAP SHOWING MONTREAL WATER-POWER PLANTS AND DISTRIBUTING STATIONS.

per annum. The great majority, however, are very far from being up-to-date, economical plants. The average all-round cost of power to Ontario consumers is probably 35 dols. per horse-power per annum.

As the Shawinigan Power Company, of Quebec, has been contracted for by the Montreal Power Company at a uniform rate of 15 dols. per horse-power per annum, delivered at Montreal, which is sufficient

* December, 1903. Toronto.

to pay interest on bonds and dividends on capital stock, the Commission assumes that municipal power developed under the most competent supervision and charged with bond interest only at a low rate, may be produced at a maximum cost of 15 dols. per horse-power per annum at Niagara. Estimating the consumption tentatively at 150,000 horse-power and the saving at 20 dols. per horse-power per annum (that is the difference between estimated present average cost of 35 dols. and estimated maximum cost of 15 dols.), the net annual value to Ontario consumers of power developed and sold at cost is computed at 3,000,000 dols., which, capitalised at 4 per cent. per annum, represents a capital value of 75,000,000 dols. The Commission, however, points out that the actual money value to manufacturers of their share in this amount is considerably in excess of their arithmetical proportion of it. "Cheapening of production means a lowering of selling price. A lowering of selling price means—within certain limits—an increased consumption. An increased consumption represents a stimulus to trade and, in consequence, a further reduction in cost of production, because of increased manufacture, and so on."

CHAPTER XXI.

Forestry and Fisheries.

Timber Resources.

Anyone who has given attention to the growth of the demand for lumber, and to the conditions under which forestry is carried on, must realise that Canada possesses in her wonderful timber reserves a source of vast wealth, which is destined to be increasingly valuable and probably will be greatly more appreciated in the future. At present no one can journey through the Dominion without being struck with the waste of timber that has been permitted in the past, and appears to be perpetrated in the present. This waste is most apparent in the ravages of forest fires, the effects of which are, in British Columbia more especially, the distinguishing feature of the landscape for many hundreds of square miles. But timber is apparently held cheap apart from this devastating influence, for vast quantities are to be seen scattered up and down the rivers, lakes, and elsewhere, as if derelict and of no practical utility. This is not entirely a matter for surprise. The area of timber-growing lands is so vast that it would seem to the superficial observer practically impossible ever to overtake the supply, and to the settler, the presence of timber, which has to be cleared, is more or less a source of worry, but those who take a more national view of the situation recall to mind the time, only a few years ago, when the maritime provinces appeared to be as highly endowed with apparently exhaustless timber resources as the western provinces are to-day, when timber lands could be purchased for perhaps a fifth part of their cost at the present time. Indeed, already in Canada the present enormous denudation of the forest areas is a subject for anxiety.

No country in the world has timber resources equal to those of the Dominion. These are, indeed, characteristic of every province. Even in Manitoba, nearly 40 per cent. of the area is in timber. Of this over 2,000 square miles are a permanent timber reserve where no cutting may be done without permit from the Government. These lands are for the most part heavily clad with spruce, though in many portions there is a sprinkling of oak and birch. It is the intention of the Government to permit no cutting to be done beyond the natural yearly increase, and as it is estimated that the spruce forests will renew themselves in twenty years it will be seen that Manitoba has a large available supply of timber for lumber and fuel purposes.

The forest area of Quebec extends over fully 200,000,000 acres. No very accurate figures can be given of the quantity of standing timber, but according to a moderate estimate recently made by the Crown Lands Department, the standing timber, exclusive of pulp-wood and under-size

trees, will produce at least sixty thousand million feet of lumber, and in the opinion of well-informed persons this figure is below the true one. One great factor in the forest wealth of the Province is pulp-wood. Its value has only recently come to the front, and now the manufacture of pulp and paper is one of the most thriving industries in Quebec. The wealth of the Province in pulp material alone is enormous. It has been estimated that there is still standing sufficient spruce to make two billion tons of paper pulp.

Great, however, as is the forest area of Quebec, it is only a fourth part of that of the Dominion as a whole, which is computed to possess a total forest area of 800 million acres. It is difficult to realise what this area is and means except by comparison. The two next most extensive timber-producing countries of which the details are approximately known are the United States and Russia. As the former has an area of 450 million and the latter one of 387 million square miles, it is clear that the area of Canada is nearly equal to that of both countries combined. Canada, in short, has 43 per cent. of the chief sources of timber supply of the world, embracing, in addition to the countries already named, Norway and Sweden, Germany, France, Spain, Italy, and Austro-Hungary. These resources, as the supplies of other countries become depleted, must lead to a vast foreign trade in the product. As it is, the value of the timber exports of Canada in 1902 was about 35 million dollars.

Throughout the Province of British Columbia there are great forests of timber, producing in places as much as 500,000 feet to the acre, and 50,000 and 100,000 feet is a common production, whilst in Eastern Canada, if they get 20,000 feet to the acre it is considered good. It is reported that the timber business has greatly improved during the last few years, and although the mills have been working night and day they have been unable to cope with the ever-increasing demand, which is certain to greatly increase when the new wood-pulp paper companies now being formed get their mills working. Applications for timber rights are coming in to the Government every day. Wood pavements will also help to increase the demand. It was recently computed that the annual timber requirements of Great Britain alone for paving amounts to about 22,000,000 feet, and as most of the towns are extending, and some are only beginning, the use of wood for street pavements, demands for this purpose will probably much increase.

The Lumber Industry.

The official statistics show that the lumber industry is of great and increasing importance in British Columbia, where the number of lumber mills increased from only 25 in 1888, and from 77 in 1895 to 105 in 1902. The daily capacity of these mills increased from 769,000 ft. of lumber in 1888 to 1,904,000 ft. in 1902; and the lumber cut in the same years rose from 31¾ million to 282 million feet, the last-named year yielding a net revenue computed at 215,275 dols. The acreage of lumber under lease in 1902 was 453,251 acres, compared with 135,063 acres in 1888. The foreign shipments of lumber from British Columbia in 1902 was over 57 million ft., and of lath 3¾ million ft.

On Vancouver Island timber is found in valuable mercantile varieties, which comprise chiefly Douglas fir, cedar, spruce, balsam, and hemlock. The forest lands are heavily timbered, and the indentations in the coast lines furnish a natural advantage in cheap water transportation of the logs. The lumber finds a ready market in Australia, the United Kingdom, South America, and Africa, but the exports so far have been almost exclusively from the Victoria Lumber and Manufacturing Company's mill at Chemainus. There are several sawmills at Victoria, and others are located at different points on the east coast of the island. In addition to the local and export trade mentioned, a profitable market is found in the North-West Territories.

At Chemainus, near Victoria, which I visited, the Victoria Lumber and Manufacturing Company's mills have a capacity of 320,000 ft. of timber a day, and are one of the two largest on the Pacific Coast. The Company controls extensive timber reserves stretching from Chemainus to the west coast of Vancouver Island, and operates two lines of railways to bring the logs to the mill. One of these runs from Chemainus about thirteen miles back into dense forest, and the other from Ladysmith. The former of these is being extended as the requirements of the industry demand, and in time will reach Alberni, when, in all probability, it will be available as a geneal traffic railway. The timber limits in the vicinity of Chemainus are declared to be among the finest on the island. The immense size of the standing trees and the density of the forest may be gathered from the fact that as much as 300,000 ft. have been cut from one acre. The average is computed at 50,000 ft. per acre. The principal merchantable trees are Douglas fir, and red cedar or cypress. Both grow to immense proportions. In some instances the Douglas fir will girth 55 ft. at the base, and stand 200 ft. and over clear of branches. It is not unusual to saw sticks of timber 64 ft. long squared 3 ft. throughout, and occasional timbers of the same length are squared to 4 ft. In 1902 the Chemainus mills exported 37,000,000 ft., which was loaded directly on vessels for Australia, South Africa, China, Japan, and South America. Lumber is also shipped from here to Manitoba and the North-West.

At Chemainus mills we found that a large part—apparently by far the larger part—of the labour is done by Chinamen, who seem to take to the work kindly. I was told, in reply to enquiries, that they did their work very satisfactorily and gave hardly any trouble. Their duties are generally demarcated in such a manner that they are not put on to the same jobs as white men.

The total lumber production in southern Kootenay and southern Yale for 1903 is estimated by an authority at 109,000,000 ft., valued at 1,635,000 dols., the average value of the lumber being taken at 15 dols. per 1,000 ft.

The bulk of the cut has gone into the Territories, the Canadian Pacific Railway sending east from ten to fourteen cars daily, with an average of about twelve cars per day. The daily export has been computed at 100,000 ft., or 3,000,000 ft. monthly, with a total of 36,000,000 ft. for the year over the Canadian Pacific Railway alone. In values this would mean 1,000 dols. a day, or 360,000 dols. for the year.

The Pulp Industry.

Scattered up and down the Dominion, but more especially in the eastern provinces, there are many pulp mills, one of which I had the opportunity of going over in the vicinity of the Shawinigan Falls (Quebec), whence it draws its power. This is an industry for which great things are hoped in the future. Canada can certainly supply the raw material as cheaply as any other country, if not cheaper than any; and she can also provide cheaper power than most. The rest would seem to be mainly a question of organisation.

The manufacture of wood-pulp has engaged the active attention of the Board of Trade of Victoria for some years past, and the Provincial Government offers inducements for the selection of the timber and water-power necessary for carrying on such an enterprise. A valuable concession has been secured by a company contemplating operation at Quatsino, and preliminary works are now in progress. This is another industry which requires a large capital, and there is every indication that an investment on Vancouver Island would give good returns. The Provincial Government has recently issued a bulletin* (No. 14) which contains much valuable information in regard to the probable extent of the markets in the countries on the Pacific Ocean for the pulp and paper which could be manufactured on Vancouver Island.

Since 1897 marked attention has been paid to the possibilities of the pulp industry in other parts of British Columbia. Several preliminary or promotive companies have been formed, and the Government, with the object of encouraging the manufacture of pulp and paper, passed legislation enabling these companies to secure for a limited time concessions of timber and water-power on special terms. So far, actual operations have not commenced.

At present in British Columbia the market for pulp alone, apart from a paper mill, is not large enough for a large pulp mill. Japan is practically the only consumer of that product available. The output of pulp must be largely consumed in the local paper mills, for the products of which there are very exclusive markets in Australia, South America and other countries bordering on the Pacific Ocean. There is, too, in British Columbia and the North-West a home demand, which is rapidly extending.

It is claimed that pulp can be manufactured several dollars a ton cheaper in British Columbia than in Eastern Canada. The location of the timber reserves on the water's edge, with water carriage to the mills, is explanation of that fact. Water-powers can be found on the coast of the mainland which afford unique facilities for industrial works, owing to their situation adjacent to deep water, to their ease of development, and to their being in the centre of the timber areas. Canada has of late developed a large business in the export of wood pulp and of wood blocks, etc., for the pulp manufacture, the United States being the principal customer. The values of the exports in both categories in the years

* This pamphlet can be had upon application at the office of the Board, or direct from the Bureau of Provincial Information, Parliament Buildings, Victoria; the subject will not here be enlarged upon.

1890 and 1902 are stated in the following figures in thousands of dollars :—

Exports of	To United Kingdom.		To United States.	
	1890.	1902.	1890.	1902.
Wood-pulp	—	818	147	1,170
Blocks, etc.	21	120	57	1,194

Whilst British imports of Canadian wood-pulp in 1902 only amounted to 818 dols., the value of our imports of wood-pulp from all sources in that year was 12¾ million dols., so that Canada contributed about a sixteenth part of our total requirements.

FISHERIES.

The fisheries of Canada are of such value as to constitute a leading national industry. Their estimated value for the year 1901 was about 25¾ million dols. Of this value, Nova Scotia and British Columbia each contributed nearly a third, New Brunswick more than one-sixth, Quebec about one-twelfth, and Prince Edward Island about one-twenty-sixth. The value of fresh-water fisheries for the same year was nearly 2½ million dols., contributed by Ontario, Manitoba, and the Territories. More than one-half of the total yield of the Canadian fisheries is exported, the value of the exports having increased from rather over 3½ million dols. in 1870 to 14 millions in 1902. Salmon and cod are the most important branches of the fishery industry. The value of the salmon catch of 1901 was about 7 million dols., and the value of the cod fishery was rather over 4 millions.

I had, of course, an opportunity afforded at New Westminster of going over some of the salmon canneries, and of ascertaining the general conditions under which the salmon industry is carried on. The subject is in itself interesting, but this is hardly the place to go into it. It is, however, a precarious industry, as may be understood when I add that whereas in 1900 the catch was reported at only 34 million lb., that of 1901 was 65 million lb., or nearly as much again.

The fishery industries of the Dominion employed 81,864 men in 1900, against 60,657 men in 1880, so that it is a growing source of employment. The Federal Government in 1902 expended about 550,000 dols. for its encouragement, of which 156,000 dols. took the form of a bounty paid annually under an Act, passed in 1882, "to encourage sea-fishing and the building of fishing vessels." This was in 1901 paid at the rate of 1 dollar per ton (of the vessels employed) to the owner, 7 dols. each to vessel fishermen, and 8 dols. 50 cents per man to boat fishermen and 1 dollar per boat to the owners. In 1901, 12,588 boats and 21,217 men were paid bounty money

The labour conditions which prevail at New Westminster, the centre of the salmon-canning industry, are in some respects very exceptional. There, during the fishing season, is a blend of Chinese, Indian, Japanese, and Canadian labour. The curious thing is that each race has its own special preferences and capacities. The Indians and the Japs engage in the work of fishing, the Chinese do the more or less purely mechanical work, and Indian women are to a considerable extent employed in

cleaning the fish prior to packing, while white men are responsible for administration. The headquarters of the industry are at Stevenston, on the Fraser River, a small wooden-built town, where this polyglot population reside for about three months of the year only. When I was there early in September a good many Chinese were still about, but very few Indians. I was informed that the general wages paid to those employed in the salmon-fishing industry was 4s. to 5s. per day.

The Growth of Canadian Industries.

The Census returns of 1901 bear witness to a great industrial development during the last decade. The following table gives the statistics of industries in which progress has been made :—

	1891.		1901.	
	Establishments. No.	Value of products.	Establishments. No.	Value of products.
Canada (total)	13,679	$363,156,797	14,650	$481,053,375
Agricultural implements	95	7,252,005	114	9,597,386
Boilers and engines ...	42	2,433,878	59	4,626,214
Boots and shoes ...	269	12,706,215	179	18,481,215
Bread, biscuits, and confectionery	269	8,374,306	358	11,637,808
Bridges, iron and steel	6	728,075	6	1,693,000
Butter and cheese ...	1,735	10,697,897	3,576	29,462,402
Carriages and wagons...	367	5,942,559	349	6,650,912
Car works	18	9,450,525	33	11,500,818
Cement (Portland) ...	11	227,275	7	765,876
Evaporated fruits vegetables	30	142,436	50	395,540
Fish, preserved... ...	805	5,661,144	1,097	8,025,630
Flouring and grist mills	230	30,721,846	400	31,835,873
Furniture and upholstered goods	234	6,625,811	169	6,949,384
Hog products	2,143	46,749,996	2,075	50,805,084
Iron and steel products	23	4.356,730	29	6,912,457
Leather, tanned and finished	170	9,711,781	143	12,068,600
Oil	43	2,128,112	14	3,519,493
Paper	32	2,570,722	28	4,380,776
Patent medicines ...	14	421,100	35	1,350,993
Printing and bookbinding	66	1,966,653	84	2,748,356
Printing and publishing	349	7,672,310	412	10,319,241
Slaughtering and meat markets	62	5,264,143	157	22,217,984
Smelting	15	3,016,200	12	7,082,384
Soap	30	1,9-9,390	23	2,143,945
Sugar refining	7	11,627,100	4	12,595,000
Tobacco, chewing and smoking	31	2,347,650	22	6,469,961
Tobacco, cigars... ...	93	3,280,114	138	5,332,151
Wood pulp	23	1,053,842	25	4,246,781
The following industries have reduced their output in 1901 :—				
Brick, tile, and pottery	520	3,701,721	573	3,299,017
Clothing, men's... ...	1,373	18,669,652	735	8 775,439
Factory product ...	—	—	58	8,980,291
Clothing, women's ...	768	4,931,779	334	4,368,380
Factory product ...	—	—	26	2,190,627
Lumber products ...	420	13,443,802	467	10,754,959
Painting and glazing ...	75	1,089,620	3	103,000
Rubber goods	9	2,040,000	7	1,173,422
Ships and repairs ...	132	3,067,475	39	1,899,836
Woollen goods	213	7,845,386	157	7,359,541

CHAPTER XXII.

The Wealth of the Dominion.

There is a not uncommon belief that the Dominion of Canada is very far from being rich. Indeed, it is not too much to say that the general impression is that the Canadians are uncommonly poor. It must be confessed that they themselves lend colour to this belief. Wherever one travels throughout the Dominion, there is a cry for capital. No one appears to have any money to spare. Every man has a dozen brilliant schemes in his mind whereby a certain fortune is assured if he only could secure a limited amount of capital for its development. Chances of wealth beyond the dreams of avarice are being missed every day because the exchequer is empty. No visitor to Canada can have failed to be impressed with the idea that the Canadians are a more or less needy people.

And yet if one only reflects for a moment on the real facts of the case it must be apparent, not only that Canada is a wealthy country, but is possibly the wealthiest country under the sun ; it certainly is so per head of the population. With an area which far exceeds that of any other country, except, perhaps, Western Australia, per inhabitant, including much of the most prolific land in the world ; with a forest area that greatly exceeds that of the whole of Europe, including Russia ; with stores of almost every known mineral, and specially rich supplies of some, such as nickel and asbestos ; with waterways in every direction, whereby the cost of transport is economised, and its progress facilitated, the potential wealth of Canada is simply incalculable. But as yet it is only potential. It has to be resolved into actual capital by the industrial processes which alone can transform wealth *in posse* into wealth *in esse*.

There is a not uncommon impression that the progress of Canada has been extraordinarily backward, and it has become a common practice to make invidious comparisons between the Dominion and the United States in respect of population, wealth, and industry. This practice has rarely or never been entirely fair to Canada. The United States had been a more or less homogeneous nation for well on to a century, when the Dominion was only a heterogeneous group of more or less isolated provinces. Its very boundary lines had not been settled until 1842. Victoria, the capital of its most promising Province—that of British Columbia—was not founded until 1843. Winnipeg was not founded until 1860, and in 1870 had less than 500 inhabitants. Manitoba was not admitted to the Confederation until 1870 ; nor were the North-West Territories, out of which Manitoba was hewn, added to the Dominion until the same year. One of the most promising areas of the Dominion—the provisional districts of Assiniboia, Saskatchewan, Alberta, and Athabasca—with an united area exceeding that of France and Germany

put together—was not created until 1882, and the district of Keewatin, with an area of 756,000 square miles, was only created six years before. Two other districts of vast extent are even later creations. The Mackenzie district, with its area of 563,200 square miles, was a still later development.

But the country is making wonderful strides in wealth, as in many other directions. The railway system of to-day represents a value of 240 millions sterling ; the canal system has cost upwards of 82 millions sterling ; the value of the improved farms now under cultivation cannot be short of 500 millions sterling, and the manufacturing industries, which are the support of about 40 per cent. of the people, must also represent a very large capital outlay, and a still greater potential wealth. If we deal with the value of Canadian resources, item by item, we should probably be amazed with the figures to which they would lead. Meanwhile, the greater part of those resources are undeveloped, and this counts for much in the estimation of their value.

In order the better to understand this matter, we may again appeal to the experience of the United States. In 1850, the Census Office computed the value of the improved farms and farm property in that country at less than four billion dollars. But in 1900, this figure was raised to over 20 billion dollars—a five-fold increase in half a century. This and kindred developments of manufactures and transportation, appreciation of real estate, and earned and unearned increment in a hundred different directions, increased the average wealth of the inhabitants of that country more than four-fold, within the last fifty years.*

In going through the Dominion, one does not hear much of men of notable wealth—certainly not nearly so much as in the United States. This does not necessarily mean that there are not a good many men of large possessions. But the majority of such men hardly know their wealth, because they are in the habit of spending it as soon as it is earned, in one or other of the many channels whereby the resources of the country are being opened up. In Canada, moreover, it is probable that wealth is more generally diffused than it is in the United States. There are not, relatively, so many men with extremely large fortunes.

Figures prepared by a United States Census official in 1893 showed that out of 62 billions of wealth then in the country, 21 billions were owned by three one-hundredths of 1 per cent. of the population. Less than 9 per cent. of people owned 33 billions of the remainder, so that practically only 9 per cent. of the population owned 45 billions of the total national wealth.

In 1894 another table was published, based upon the surrogates' records of estates in New York State, and showed that 1 per cent. of the people possessed 55 per cent. of its total wealth. Another 11 per cent. of the population owned over 32 per cent., so that 12 per cent. of the whole nation held among them 87 per cent. of the total resources of the Republic, while the remaining 88 per cent. of the people owned only 13 per cent.

Still another estimate of the wealth of the country, made in 1891,

*According to Census Office figures, from 307 to 1,235 dols. *per capita*.

assigned 70 per cent. of the total wealth of the country to the rich, who were only $1\frac{4}{10}$ per cent. of the whole population, and 12 per cent. of the wealth to the middle classes, who were $9\frac{2}{10}$ of the population. These two groups, representing $10\frac{6}{10}$ of the population, owned therefore 82 per cent. of the total wealth.

In Canada there is no such wholesale appropriation of the wealth of the country as the figures indicate. But there is probably not nearly so much poverty in Canada as there is in the United States. One of the things that most struck my friends and myself in travelling through the Dominion was the almost entire absence of destitution. At a number of the towns visited we were informed that there were absolutely no destitute, no poor's rates, and no workhouses.

The man in the street is liable to overlook one of the principal contributions to the wealth of the Dominion, because it is not quite so much in evidence as most others, and is not tabulated in the trade returns. Yet every emigrant, and his small stock of capital, or its equivalent, counts for something. Sir Richard Cartwright has pointed out that at present the United States are making Canada yearly a present of 5,250,000 dollars' worth of settlers' goods, brought in by the immigrants from that country. American economists have calculated the value of an able-bodied immigrant as 1,000 dollars. The worth of these new settlers to the Dominion is incalculably greater, and within a year and a day may produce an increase of wealth of something like 10,000,000 dollars. In four years Canada has imported settlers' effects to the value of 17,000,000 dollars, the expenditure on the Immigration Department in that time being 2,500,000 dollars.

The growth of Canadian wealth may be computed to a certain extent by a short comparison of figures; thus—

	1870. 1 = 1,000 dols.	1902. 1 = 1,000 dols.
Bank capital paid up	33,033	99,869
Capital on deposit	48,763	390,370
Bank assets	103,197	585,761
Agricultural exports	25,504	94,517
Imports, all kinds...	71,237	202,791
Total trade (1873)...	217,304	414,431
Life insurances in force	42,694	508,690
Public assets	37,783	94,527

The public interests in Canada have been promoted by a judicious expenditure on railways and canals. This expenditure, between 1868 and 1902, amounted to the following sums:—

On railways	145,562,987 dols.
,, canals	66,200,023 ,,

In addition to which about 33 millions of dollars were expended on other public works, and $20\frac{1}{2}$ millions on public buildings, making a total outlay of $265\frac{1}{4}$ millions.

There are two classes of savings banks in Canada—the one run by the Post Office and the other by the Government. Comparing the amounts

on deposit in each for the years 1889 and 1901, we get the following figures :—

	Amount on deposit in dollars. 1889.	1901.
In Post Office Banks	23,011,422 ...	39,950,813
Government Savings Banks	19,944,934 ...	16,098,146

The total amounts in both categories represented 9 dols. 66 cents per head of the population in 1889 and 10 dols. 71 cents in 1901. But in a country with so many facilities for the investment of small savings as Canada, the amount in the savings banks can hardly be taken as a criterion of either wealth or comfort, as there is every possible inducement to spend money on reproductive operations of some kind.

It has been proposed to divide the history of the American Republic from its foundation to the present time into three periods—the first extending up to about the year 1835, during which the power of capital in private hands had not begun to show itself seriously aggressive, both the moneyed class and their accumulations being small. In the second period, extending for another thirty or forty years, the growth and the concentration of capital began to be more rapid, and capitalists were rapidly absorbing the natural resources of the country, and organising for their own profit the labour of the people in relation to those resources. The third period was that which followed the immediate effects of the war,—between 1870 and 1890,—when millionaires began to multiply, and when wealth began to get into comparatively few hands, instead of having been, as formerly, "distributed with a general effect of evenness never previously known in a large community."* The Canadians have this example before their eyes. It remains to be seen what they will do with it.

A recent writer calls attention to the change that increase of wealth has produced in the United States. He remarks that "a few years ago you could go into any part of the country and meet with those strange, unique characters as the Yankee. It was a virtue in those days to live prudently and modestly; it was a virtue to conduct government economically and honestly; even the members of the President's Cabinet in our early days when using Government vessels in their private pleasure trips were known to pay a sum into the United States Treasury in payment therefor. Those days have passed away. Wild extravagance in private and public life has taken their place. . . . . Our multi-millionaires take no part in public life, procure money only for the purpose of physical enjoyment and power, and atone for sins through charity. . . . . The great combinations of wealth place only their tools in high positions in the State, and make very sure that men of personal virtue, independence, and high character shall not occupy such places. The individual man is withering more and more away, while the combination of bankers, railway directors, and protective tariff barons are controlling the whole business of our country, dictating in secret the policies of Government, making and unmaking men, furnishing the funds to nominate Presidents and to bring about their

* *Equality*, by Edward Bellamy, p. 277.

election, and crushing the self-respect and manhood of the American people. Since the Civil War our great prosperity has been owing more to the exports of our farmers than to any other single cause. That the farmer should be happy, contented, and prosperous is of the highest importance to the welfare of our country; and yet during all these years he has been selling his surplus products in competition with all the world in foreign markets, while at home every nail which he has driven, every hundred feet of barbed-wire fence which he has used, every machine which he has employed, every thread of his clothing has been taxed, and the great industrial combinations have sat at his fireside, sipped in his cup, lived by his side, and robbed him steadily."

If this record be true, it has certainly as yet no counter-part in the Dominion. The few rich men now found in Canada still take an interest in the affairs of the State, the Province, and the Municipality. I hardly met with, or heard of, a single man who led an inactive life. All the men of wealth appear to be immersed in business. Lord Strathcona is a typical Canadian, and sets an example which is generally followed, and of which his fellow-countrymen are justly proud. Some years an octogenarian, and perhaps the richest man in Canada, he is still one of the most active. He makes several voyages between the Dominion and the Mother Country every year, and as High Commissioner in London leads a busy official and social life. So with many other men of lesser "estates, degrees, and dignities." The Canadian, like the average American, does not know the meaning of the term "gentleman," as applied to a man of idleness only. In the one country, as in the other, there is a tendency to think and speak of the truly idle man as "a tramp."

Not only so, but Canada has always been economical in a national sense. In Lower Canada the total expenditure for public purposes in the year 1835 was only £67,432, which included £1,793 for Government and Justice, and £405 for Militia pensions and staff! In the same year £23,229 was expended on national education, and £13,923 on canals.* Since those primitive times much has happened. Canada now undertakes an expenditure befitting her more exalted position among the nations. But her federal expenditure per head is still relatively small, less than a third of that of the seven Australasian Colonies, and considerably under one-half of that of the United Kingdom.

* Martin's *British Colonies*, p. 168.

SECTION IV.—THE HUMAN FACTOR.

CHAPTER XXIII.

Organisation and Administration.

There is a wide difference in matters of detail between Canada and the United States. The Dominion as yet is in a more or less chrysalis condition. Its industries are naturally much less fully developed. Its wants are much smaller. Its skilled workmen are much fewer. Its population is not so settled. It is altogether in a more crudely formative state. Nevertheless, it has in a good many cases established large factories whose products are, or appear likely to be, much in excess of the present requirements of the country, and therefore destined for export on a considerable scale. It is not to be expected that from industry so situated and organised we can learn the same lessons that are inculcated by the more mature and highly-developed industries of such countries as the United Kingdom and the United States, but that does not mean that they are not deserving of attention.

The War of Elements.

The two principal national elements in Canada at the present time are the French Canadian and the Scotch. Although numerically by far more important than any other single nationality, the French Canadians are less active and enterprising, and very few of them are at the head of "enterprises of great pith and moment." This element is increasing both absolutely and relatively. The Census of 1901 showed that it was greater than at any previous Census, being then 3,070 per 10,000 of the population, or about 31 per cent. In the same Census year the number of British-born residents in Canada was 94 per cent. of the whole population, 87 per cent. of them having been Canadian-born, so that only 7 per cent. were born in other parts of the Empire.

The great bulk of the French Canadians are small farmers or shopkeepers, or are engaged in the lower grades of industrial occupations. They have in Montreal their own Chamber of Commerce, and through it they took a part in the reception of the delegates of the Congress of Chambers held in August, 1903. They do not, however, hold anything like a commanding position in the major industrial affairs of the Dominion, although in political matters, whether Federal, Provincial, or Municipal, they have played a somewhat prominent part. The French Canadian, like the typical Irishman, seems to have a kind of genius for public life—after a fashion. Sir Wilfred Laurier is probably the most distinguished public man they have hitherto produced, and they are, not unnaturally, proud of him. The Canadians of French origin are perfectly loyal as a rule, although their loyalty is not of that exuberant and ardent character that is found among other sections of the community—especially the English and the Scotch.

It cannot be questioned, I think, that the Scotch element, measure for measure, has done more for Canada than any other, and naturally, therefore, Scotchmen are found generally in places of trust, power, and emolument. Lord Strathcona has been for many years at the head of the great Hudson Bay Company, which, until a few years ago, practically controlled the destinies of British Columbia in much the same way as "John Company" did those of British India. The same remarkable man, with Lord Mount-Stephen—another Scot, who, by a notable coincidence, was born and brought up in the same district of Scotland—had a great deal to do with the development of railways and banking in the Dominion. The influence of this control is reflected in the names given to many of the stations on the route of the Canadian Pacific Railway. For hundreds of miles those names are borrowed from places in the North of Scotland. The Scotch element has also exercised an influence which is much greater than mere numerical importance would suggest in the agriculturial and industrial affairs of the country. It was a Scotchman who developed the Nova Scotia Steel Company, and the same competent Scot is now at the head of the Dominion Iron and Steel Company. Scotchmen are generally at the head of the great mining concerns, and Scotch colliers are earning, in some of the collieries of Crow's Nest Pass and Vancouver, the highest wages paid to coal-miners in any part of the world.

Methods of Business.

The pace is not nearly so great in Canada as it is in the United States, although in this respect the influence of railway contact and of sustained example is being more and more felt. The Canadian, left to himself, is not a "hustler." This is only what might safely be predicated of a community in which the most influential factors are the French and the Scotch. But the American element is now tending to leaven the whole lump, and that means an awakening in business methods. The total number of native-born Americans in the country in 1901 is stated by the Census at 128,000, against 81,000 in 1891, so that the American influence is increasing. Hitherto it has been mainly agricultural in its aims and operations, but it is being now applied on a larger scale to mining and manufacturing. Within recent years a great deal of American capital has been invested in these two branches of Canadian commerce and industry, usually subject to the proviso that Americans shall be in charge. The Dominion Iron and Steel Company was largely floated with American capital, and so also with the principal copper, lead, and other mines in British Columbia, and a number of the principal factories and plants in the Eastern States, such, for example, as that of the Aluminium Company at Shawinigan Falls, elsewhere referred to. Where this American invasion appears in evidence, American conditions are naturally introduced—not always, however, with the most conspicuous success, as witness the fate that has befallen both the Dominion and the Sault Ste. Marie iron works, described in another part of this volume. The fact is that the Americans have generally failed to take a correct measure of the difference in the economic conditions of the two countries, and they

have gone to work as if Canada had a population of 80 millions, like the United States, instead of one of only six millions. Time will alter this, and give American methods a better chance.

General Management.

Canada is as yet too "young" to have a class of trained managers such as there is in England and in the United States. There is no class of managers that can be called typically Canadian, as there is one distinct class for England and another known as American. The Canadian managers of to-day are brought from many different lands and localities. Perhaps, on the whole, the greater number of them are imported from the United States. This remark certainly applies to the managers of coal mines, iron ore mines, and iron and steel works. Take the Dominion iron and steel works of Cape Breton as an example. The first three general managers of the enterprise were trained in the United States—Mr. Moxam, Mr. Shield, and Mr. Baker. The present general manager is a Scotchman, whose training has chiefly been had in the maritime provinces. At some of the collieries visited, I found the managers were Scotchmen—alike on the Atlantic and the Pacific. The Canadians appreciate the value of technical education better than they did a few years ago. Had they held it in higher esteem only three years since it is probable that a good many of the errors committed at the Dominion collieries and iron works at Cape Breton, at the Algoma works of Sault Set. Marie, and at some of the copper mines and works elsewhere, would not have been so serious.

To-day not a few of the men in managerial positions, alike at mines and at smelting and other works, are graduates of the Universities of Canada and the United States. I found, for example, that the technical control of the Vancouver engineering works was in the hands of a graduate of McGill University (Montreal). Some of the higher schools of Canada have also supplied their quota. There is now as much appreciation of technical training in Canada as on the other side of the line, and although the pace is quieter and steadier, they are "getting there" all the same.

The Handling of Workmen.

The industrial status of Canada is at present affected, and is liable for a long time to come to be affected, by the relative scarcity of skilled workmen, as well as of capable agricultural labourers. The rates of wages paid do not as a rule differ much from those paid in the United States, and the hours of labour are also the same in the majority of industries, nine to ten hours per day being the average. But the product per man appears to be materially less in Canada than in the United States, and in the coal mines of Nova Scotia, and the iron and steel works of the same Province, I was much struck with this difference. This result is not due so much to incapacity or unwillingness on the part of the workmen as to slackness on the part of the management. In the United States, the influence of trade unions has—until lately, at any rate—been kept well in check. The wages and conditions

of work in the bituminous coal mines, for example, are controlled from year to year by a regular scale, settled by mutual agreement at a conference of duly appointed representatives on both sides. At the great Carnegie works, the workmen have given comparatively little trouble since the Homestead strike of ten years ago, and the trade unions, as such, are not recognised. The same principle is applied to the vast mining and manufacturing interests of the United States Steel Corporation. But in Canada I found in many cases that the trade unionists appear to have things pretty much their own way, and in some that they seem to hold capital in the hollow of their hands. Petty labour disputes are of frequent occurrence. This is to some extent—perhaps mainly—due to the newness and rawness of the industrial conditions of the country. In the old country and in the United States, industrialism has been a potent force sufficiently long to enable the leading centres to gather together a more or less settled population, controlled in some measure by responsible leaders. But the formative stage in which Canadian industries now are hardly allows of this safeguard to industry being as yet in effective operation. Speaking generally, the employers hardly know their workmen or the workmen their employers. Factories have been established in many cases in the wilderness, as at Shawinigan and Montmorency, so that the necessary labour has had to be collected from far and near, and accommodation has had to be provided for it in the manner nearest to hand.

Labour Disputes.

The Canadian Government have both a Minister and a Deputy-Minister of Labour, and issue every month a Labour *Gazette*, more or less on the lines of the one issued by the Board of Trade at home. This publication is now passing through its third annual volume. When I was in Ottowa, I called on Mr. W. L. Mackenzie King, B.A., the Editor of the *Gazette*, and the Deputy-Minister for Labour, through whom I was courteously afforded the opportunity of seeing how the Labour Department is worked and of consulting the files of the *Gazette*. These showed me that in 1901 there were 104 labour conflicts in the Dominion, involving directly 23,581 workers, and indirectly 4,442, while the total number of days lost in the year was 684,282. The largest number of disputes (53) took place in the Province of Ontario, which is, of course, the principal industrial centre, and Quebec occupies the second place with 29 disputes, while British Columbia comes third with 10. The strike of the Canadian Pacific Railway trackmen accounts for 310,375 lost days, and a strike of the salmon fishermen on the Fraser River was responsible for 128,000 days more, while 116,650 days were lost through mining disputes, some of them in British Columbia, so that this Province, despite its relatively small population, accounts for about two-thirds of the total loss of working time due to labour disputes in the year. As to the modes of adjustment adopted, the official figures show that in fifty-five cases negotiations between the parties concerned led to a settlement, in thirteen others the workmen returned to work on the employers' terms, and only in eleven cases were conciliation and arbitration applied.

In 1900, a Conciliation Act was adopted by the Candian Legislature for the settlement of trade disputes. Under this Act the Department of Labour may intervene in a labour dispute when called on to do so. In 1902 their services were called in on seven different occasions, the sum of which immediately affected about 1,500 workers.

The considerable strength of trade unionism in Canada is shown by the fact that "there were in all 190 Labour organisations reported to the (Labour) Department as having been formed during 1902," of which 60 per cent. were reported from the Province of Ontario. No less than twenty-one new unions were reported from the single city of Toronto while Victoria (British Columbia), with only some 30,000 inhabitants reported twelve. Altogether the year witnessed the formation of twenty-five new unions in the metal and engineering trades. Five of these were in the iron and steel industries and five in electrical industries. No less than eleven of the new organisations were "federal labour unions," six were "retail clerks," four were barbers, six were brewery workers, three were labourers, and two were civil employés.

The Canadian Government Departments are accustomed to enforce regulations for the suppression of the sweating system, and for the payment to both sexes of what are described as "fair wages," as well as the performance of work under proper sanitary conditions.

Wages and Trade Unions.

Almost throughout the length and breadth of Canada I found a strong condemnation of the growth and attitude of trade unionism. There can be no doubt that during recent years this movement has in Canada assumed much more formidable dimensions and put forward greater pretensions than formerly. Until lately, indeed, Canadian manufacturers did not find trade unionism much of a force to be reckoned with —certainly not a force that imposed grievous burdens and restraints upon the progress of business. The recent greater aggressiveness of trade unionism in the United States has, however, reacted on the Dominion, while greater vitality and power has been given to the system by the tendency, marked in Canada as elsewhere, to concentrate population in urban communities, although some of the most serious of the recent strikes have taken place in isolated localities, such as the Crow's Nest Pass coalfield and the Nanaimo collieries on Vancouver Island. The trade unions of the Dominion appear to have set themselves to keep up the present extraordinarily high rates of wages, although, of course, those wages have been founded on the difficulties experienced in the past in obtaining labour at almost any price, and in course of time the greater abundance of suitable labour would be likely, under a system which allowed free scope to the operation of economic laws, to adjust the balance.

In the east manufacturers complain that young Canadians are every day prohibited by artificial restraints from learning the trades for which they are naturally fitted. Organised labour is permitted to control and limit the output of factories. Trade unions generally refuse to work "by the piece," and the daily output in many cases, notwithstanding the introduction of labour-saving machinery, is stated to be to-day "not

more than two-thirds of what it was a few years ago."* The same authority is responsible for the statement that "to-day industrial progress is retarded, and thousands of dollars are lost, because certain working-men in Canada refuse to use, or to work upon, the honest goods turned out by free working-men who may not be identified with certain labour organisations." This condition of things is attributed to the fact that the labour organisations are in Canada irresponsible bodies before the law.

Experiments in Profit-sharing.

From all that I could learn, it would appear that this form of industrial remuneration has not as yet received much attention in the Dominion of Canada. Here and there at different times it has been adopted by employers, and it is at the present time a feature of a few industrial establishments in some of the provinces. Among the recent experiments the most important from a practical point of view is, doubtless, the system of profit-sharing which has been introduced by the British Columbia Electric Railway Company, Limited, in connection with the company's business in Vancouver, British Columbia.

The arrangement provides that after the ordinary shareholders have received a 4 per cent. dividend the balance of the profits available for dividends yearly is divided as follows: two-thirds to the shareholders, and one-third to the employés. Every employé who has worked regularly for the company during the twelve months ending June 30th each year, is entitled to participate in the division, and the proportion of the profits is divided equally among them.

Pensions.

A pension allowance is granted to the retired employés of some of the leading railways. That authorised by the Canadian Pacific Railway is granted upon the following basis:—For each year of service an allowance is made of 1 per cent. of the average monthly pay received for the ten years preceding retirement. For instance, if an employé has been in the service of the company for forty years, and received on an average for the last ten years 50 dollars per month, the pension allowance would be 40 per cent. of 50 dollars, or 20 dollars per month. All such allowances are paid monthly, the company reserving the right to cancel any pension for gross misconduct. No assignment of pension will be permitted or recognised. The acceptance of a pension allowance does not debar a retired employé from engaging in other business, but such employé cannot so engage in other business nor re-enter the service of the company without forfeiting his allowance, except with the consent of the committee. As the system is entirely voluntary on the part of the company, and as the employés are not in any way contributors to it, its inauguration and operation gives no employé a legal right to be retained in the company's service or a legal claim to any allowance. This system came into force on January 1st, 1903.

* Report of the Special Committee on Labour of Canadian Manufacturing Associations, 1903.

Apprentices.

The following regulations apply to apprentices in the employ of the Canadian Pacific Railway at Vancouver, and in the Rockies generally :—

Any boy hereafter engaging himself to learn the trade of a carpenter, pipefitter, or tinsmith, must serve not less than five years, and must not be less than 16 or over 18 years of age ; all applicants must be able to read and write and know the first four rules of arithmetic.

The apprentice who, after having served one year, if in the opinion of the foreman shows no aptitude for acquiring the trade, shall be transferred or dismissed and all obligations accepted by the company will of necessity be forfeited.

It shall be the duty of foremen and others in authority to advance apprentices as far as possible in all parts of the trade, especially during the last two years of their time.

In some cases restrictions are placed on the number of apprentices employed. At Vancouver, for example, the telephone operators have the following clause in their agreement :—

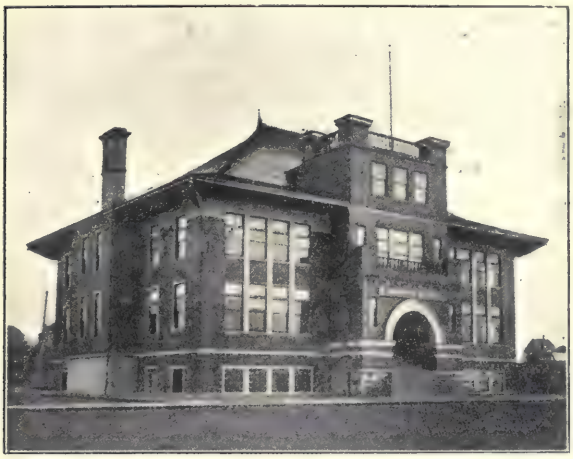
The number of apprentices shall be limited to one apprentice to every two repairers. No apprentices shall instal telephones.

Combinations and Syndicates.

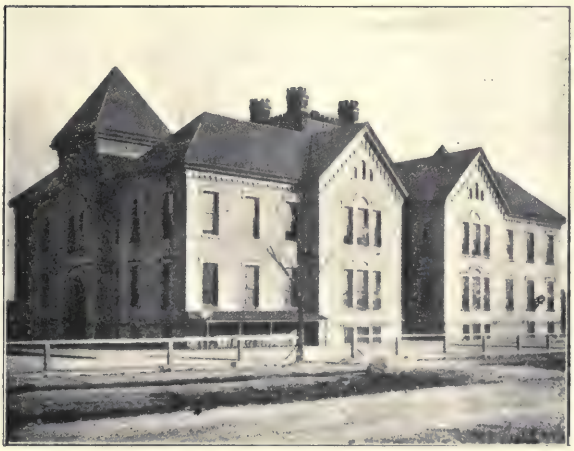
It is not to be expected that there would be as many, or as important, combinations and syndicates in a sparsely-peopled country like the Dominion as in much more thickly-populated countries like the United States and Germany. Nevertheless, in a few cases the Canadians, or those who are responsible for the organisation of their industries, have shown an appreciation of the economies and advantages possible from this system. One of the most notable of these organisations is the Fraser River canners' Association, founded in 1902, which embraces the majority of the canneries of British Columbia, and which since then appears to have justified its establishment by considerable economies in working expenses.

Banking.

The Banks in Canada are carried on partly on the Scotch system and partly under the conditions that are customary in the United States. The total average monthly circulation has been doubled within the last fourteen years, and in 1902 was over 32 million dollars. The paid-up capital in the same year was about 70 million dollars, and the amount on deposit was 390¼ millions, while the liabilities were returned at 467 millions and the assets at 586 millions. An amendment to the Bank Act passed in 1883 requires the publication of the rest or reserve fund held by the various banking concerns. This has increased from 274 million dollars in 1891 to 482½ millions in 1902. The thirty-eight banks carried on in the Dominion had, in 1902, 904 branches, of which 420 were in Ontario, 147 in Quebec, 101 in Nova Scotia, 79 in Manitoba, and only 52 in British Columbia. The transactions recorded show a great increase from year to year.



PUBLIC SCHOOL, VANCOUVER.



PUBLIC SCHOOL, VANCOUVER.

In a great many cases throughout the Dominion, it is probable that the banks have done a more or less speculative and, therefore, risky business. They have often had to advance capital to clients on doubtful ventures, that have ultimately come to grief. In such cases the banks have taken over properties and held them until there was an opportunity to sell. Where no such opportunity occurred, heavy losses have been incurred, and some of the weaker banks have failed. Speaking generally, the Canadian banks, especially in the west, are ready to assist in financing a promising venture, and to take considerable risks. Loans in British Columbia, where the risk is probably greater than elsewhere, are made at 6 per cent. to clients, and at 7 per cent. to outsiders. In the import trade a considerable amount of business is done on letters of credit.

It is claimed by the Canadians, however, that the banking situation in the Dominion is more satisfactory than it is on the other side of the line. The elasticity of the circulation in Canada, it is argued, will provide the grain-growing sections of the country with all the funds required without causing any contraction in the supply of money for legitimate business purposes in the trade centres of the Dominion. The mercantile discounts of the Canadian chartered banks have increased by some 67 millions within a year, but the amount of money advanced on stock collateral, or short loans at home and abroad, by the banks is smaller. There have been substantial increases in the paid-up capital and the cash reserves of the banks.

EDUCATION.

Canada is admirably equipped with educational facilities of all kinds, from the public schools, which are usually entirely free, to the universities, of which there are about half a dozen of the highest rank, including the unusually well-equipped McGill University at Montreal. The extremely isolated conditions under which a great many Canadians must necessarily live, in a country which averages less than two inhabitants to the square mile of area, would suggest that a large part of the community must be imperfectly provided with education, and to some extent this must be so; but both the Federal and the Provincial Governments have made every possible effort, often at what would seem to be disproportionately heavy cost, to overcome this drawback. The people as a whole, in short, are very well educated, and no people could more adequately appreciate their advantages and needs under this head. Technical education is receiving more attention at the high schools and universities. Views of typical common school buildings are shown herewith.

CHAPTER XXIV.

Prominent Labour Conditions.

General Survey.

The Dominion is handicapped in her industrial career by labour conditions, which both require her to pay much the same rates of wages as are paid in the United States, often for an inferior grade of work, and over a large area subject her manufacturing interests to the tyranny and the disabilities entailed by the worst forms of trade unionism. It is difficult, perhaps impossible, to provide any remedy for either of these drawbacks. The proximity of the Dominion to the United States entails a constant liability to attract labour thither, unless it is as satisfactorily provided for on the one side of the line as it would be on the other. This is not a matter of wages alone. It also includes the systems of government and laws, the conditions of employment apart from nominal wages, the cost of living, the facilities for "getting on," and other matters that bear on the moral and material welfare of the individual both as a workman and as a citizen. Speaking generally, there is less "driving" of workmen in Canada, and workmen have on some grounds more freedom than in the United States.

Canadians believe that the influence of the United States has not been entirely healthy in its bearing on the labour of the Dominion. It is, perhaps, natural that labour should be capricious and exacting where it is at a high premium, as it now is over the greater part of Canada. This is more especially the case in the west, where unskilled labour is paid quite as high, and perhaps even higher, wages as is paid in any region I know of that has any claim to be regarded as settled, excepting, perhaps, in one or two places in South Africa. The Dominion is now also realising the disadvantages—not, perhaps, unmixed with a certain amount of gain—of the collection and assimilation of a highly heterogeneous population that was at an earlier date the experience of the United States. In its earlier history the immigrants were mainly of British origin, and were, therefore, more or less homogeneous—kindred in character, conduct, and habits to the people at home. But in 1902 not more than 25 per cent. of the whole immigrants entering Canada were of British origin, while about 40 per cent. entered from the United States, and nearly 20 per cent. were Russians, Fins, Galicians, and Scandinavians. The remainder were drawn from all the countries of Europe, and from China and Japan.

With reference to the influence exercised on the trade unionism of Canada by the proximity, and overshadowing importance of the labour interests of the United States, it would seem that the present status and prospective demands of labour in Canada are largely controlled by that influence. Few trade union conferences are held

in Canada which do not betray the cloven hoof of American labour interference. Several such conferences were held in 1903, including one described as the Iron Moulders' International Convention, which met in Toronto in July, and at which 540 delegates, representing every state and territory in the United States, as well as several provinces of the Dominion, were represented. The annual meeting of the Brotherhood of Locomotive Engineers was also held in Toronto in July, and was attended by over 300 delegates from all parts of the United States and Canada. The Eighteenth Annual Convention of the Trades and Labour Congress of Canada, held at Berlin, Ontario, described as the most important assembly, from the standpoint of labour, of the year, passed a resolution excluding all assemblies of Knights of Labour from representation, and the formation in consequence of a new central body, to be known as the National Trades and Labour Congress, the result being also partially due to the attitude of the American Federation of Labour in claiming a superior rather than a parallel jurisdiction to the Dominion Congress.

Some of the special difficulties to which Canadian labour is exposed are set out in the Report of the Royal Commission appointed in 1903 to investigate the strikes in British Columbia, published on the 23rd of August, 1903. In this Report is recorded a story of the most unwarrantable and mischievous employment of the power of organised labour by an unscrupulous foreign agitator the history of Canada affords. The principal dispute concerning which evidence was heard was the strike of certain employés of the Canadian Pacific Railway, because of the refusal of that company to extend recognition to the United Brotherhood of Railway Employés, a secret society, the members of which are bound together by an oath pledging their entire allegiance, without question, to the orders of the organisation, which has its headquarters in San Francisco. The management of the affairs of the organisation is centred in the hands of its president and board of directors, one clause of the constitution expressly providing that local unions shall, under certain circumstances, not possess the power of saying whether or not they shall become involved in a sympathetic strike, but shall, under penalty of expulsion, obey the orders of the president and the board.

The Canadian Pacific Strike.

As showing how labour disputes are liable to be originated and carried on in Canada, some official details of the remarkable strike on the Canadian Pacific Railway may be given. The clerks, office men, station baggage-men, and employés at the stores at Vancouver who were members of the newly-organised United Brotherhood of Railway Employés went out on strike on February 27th, 1903, and an appeal was made to teamsters and employés in the building and iron trades to refuse to handle material carried by the railway. At Revelstoke the members quitted work on March 3rd. Two days later the strike extended to Nelson, where twenty-six men were called out, and three at Rossland and three at Eholt quitted work the same day. The strike extended to Calgary and Winnipeg,

and everywhere there was an appeal to unionists to refuse to handle freight carried by the railway. In accordance with these appeals the Longshoremen's Union, from 150 to 200 strong at Vancouver, quitted work. The British Columbia Steamshipmen's Society and the telegraph messenger boys also struck. The Teamsters' Union refused to haul freight to or from the railway sheds or wharf, and when the master teamsters undertook the work about 200 of the union members went on strike. The Canadian Pacific Navigation Company was induced to refuse freight or baggage from the Canadian Pacific Railway or to carry coal for the Empress Line of Pacific steamships. An unimportant strike occurred in consequence of an apparently unintentional violation of this agreement. Efforts were made to use the power of the Coal Miners' Unions to shut off the railway's supply of fuel. While there were direct grievances tending to provoke the strikers in the coal mines at Union and Ladysmith, the partial dependence of the railway on these mines was an additional influence tending to promote the suspension of work. The Bakers' Union in Vancouver refused to handle flour, butter, or other articles arriving by the boycotted railway, and the Longshoremen's Union of Sydney, New South Wales, was appealed to with regard to handling freight on the company's ships. In these and many other efforts put forth with more or less success there was apparently a consistent effort to "corner" the labour market.

International Unions.

The Report of the Royal Commission on the strikes of British Columbia in 1903 contains the following :—

"At the present time nearly all the industrial callings in Canada are organised, and some three or four score of them as integral parts of international unions, which have their headquarters in the United States.

"It is, we think, a very difficult question as to how far the joining by Canadians of these organisations ought to be sanctioned or interfered with. Many of them claim the right to approve of any settlement which may be arrived at between the employer and their members as the result of a strike, especially if the members have been receiving strike pay, as, for instance, in the case of the Western Federation of Miners, Article V., Section 2, of the constitution of which is as follows :—

"'Any contract or agreement entered into between the members of any local union and their employés as a final settlement of any difficulty or trouble that may occur between them shall not be considered valid or binding until the same shall have the approval of the Executive Board of the Western Federation of Miners.'

"Nor is any contract recognised as valid which conflicts with the rules of the union, which are generally framed to suit the union without the authority or sanction of any law. It is thus plain that a Canadian, when he joins such a union, surrenders a considerable portion of his freedom in matters of contract to a small body of men in a foreign country, and is, to that extent, at all events, subject to

their dictation. However, so far as we have been able to gather, the control exercised by these foreign officials has, generally speaking, not been inimical to the interests of the Canadian members.

"The main arguments advanced by Canadian workmen for the necessity of joining these international organisations are as follows: First, that they are too few in numbers to form effective organisations of their own. For instance, in the case of printers, there are only about 2,400 union men in all Canada, whereas in the International there are about 55,000. This body is strong enough to maintain a large benefit fund and a home for destitute and aged printers in Colorado. Second, there is greater economy in the administration of the International body, and so a greater margin for benefit funds. Third, membership in such organisations practically ensures work anywhere in North America. All the member has to do is to present his membership card to any official, who proceeds to secure him work, and until he gets it he is assisted by the union. Fourth, in the event of strike, they have the co-operation and financial aid of a powerful body, and the chances of substitute labour coming from the other side to take their places are reduced to a minimum, as of course no members of the union would come over to do so."

The chief objection to the system of International unions is stated by the British Columbia Commission to be the liability of Canadian workmen to interference by the officials in matters of contract and settlement of differences with their employers. If, however, Parliament were to declare that notwithstanding anything contained in the constitution, or in the rules of the International bodies, any agreement arrived at by the employer with his employés in settlement of disputes shall be valid and binding, they think the most formidable objection to these bodies would be removed.

Secret Political Organisations.

The British Columbia Labour Commission further reported that there is a class of so-called unions developing in Western America, which is really not a trade union at all, but a secret political organisation, whose members are bound by an oath so strong as to be considered a shield against giving any but forced testimony. The primary object and common end of this class of organisation is to seize the political power of the State for the purpose of confiscating all franchises and natural resources without compensation, and to this class belong the American Labour Union, the Western Federation of Miners, and the United Brotherhood of Railway Employés, with an aggregate membership of between 200,000 and 300,000 men. These three are in confederation with each other, the two latter being affiliated with the former, and their leaders were engaged last year in a conspiracy to sweep all the employés of the Canadian Pacific Railway into the United Brotherhood, and all the coal miners into the Western Federation, no doubt with a view to being able to stop all transportation and coal mining whenever it might appear expedient in the advancement of the common end. All these bodies have declared for Socialism.

Legislative Aspects.

The following resolution urging the incorporation of trade unions was adopted in 1903 by the Congress of Canadian Manufacturers :—

"That whereas organised labour bodies in Canada are not bound or controlled by the legal restrictions under which other organised companies or associations operate ;

"And whereas this condition is constantly taken advantage of by the most radical element composing labour organisations to the detriment of property, the destruction of mutual confidence between the fellow-citizens of this Dominion and the injury of the character of Canadian working men and their organisations ;

"Be it resolved, That this Association urge upon the Dominion Government the necessity of enforcing the incorporatio n of all trades unions and other such organisations whose objects and acts are calculated to affect, directly or indirectly, the industries or general business enterprises of the country in order that such organisations and the members thereof shall become amenable to the law, and assume responsibilities collateral with the rights and privileges which they possess."

The direction of labour legislation in Canada may be illustrated by a reference to some of the Bills recently introduced into the Federal Parliament. One of these was a Bill introduced into the Senate by Senator Lougheed in order to prohibit the foreign labour agitator from inciting Canadian workmen to strike. The Canadian manufacturers, in supporting this Bill, placed before the Senate at Ottawa specific instances showing that unjust and unreasonable strikes have occurred in Canada through the interference of walking delegates from the United States, resulting often in paralysing industry for the time being.

Another measure, of kindred aim, was introduced by Senator Beique providing for the protection of free labour during the progress of a strike. This Bill is expected to remove some of the disagreeable methods resorted to by members of labour unions in exerting what has been in many cases tyranny over their fellow workmen.

In the Ontario Legislature a Bill was introduced, at the instigation of labour unions, providing for the establishment of what was termed a "Board of Conciliation," with a leading labour official as one of its executive officers. This Bill was withdrawn, but it is likely to be heard of again.

The Alien Labour Law limits the introduction of skilled labour. Attempts were made during the last Session of Parliament to have it abrogated or amended, and made to operate so that where the necessary supply of skilled workmen could not be obtained in Canada they might be brought in from the United States. The Bill, however, was not viewed favourably by the House of Commons, although the necessities of the case were recognised.

A Bill designed to secure the fuller recognition of trade unions was introduced in 1903 into the Federal Parliament. This was described as the legalisation of the Union Label. This device has been called by one of its leading advocates in the United States, where it was first

introduced, the "Little Prince of Boycotters." Had the Bill to legalise the Union Label been made law, it would have practically resulted in giving organised labour control of the shop government in the factories of Canada. The Bill was, however, thrown out.

General Attitude of Labour.

The general labour situation, so far as it relates to the relations of employers and employed, is indicated by the following paragraph from the last report of the Canadian Manufacturers' Association :—

"Perhaps the most important class of legislation with which we have been called upon to deal is that with regard to organised labour. Never in the history of Canada have labour unions shown so much activity; never have they been so well organised, and never has that organisation made such determined, and in many cases unreasonable, efforts to secure for labour the domination of Canadian factories, and to wrest from the employer his inherent rights to control the policy of his business and manage it as he thinks best."

In September, 1903, the Canadian Manufacturers' Association had before it a resolution affirming that the Department of Labour at Ottawa, in its general policy and through its official organ, "gives constant and abundant evidence that it has regard for, and exists for, the interests of organised labour only, a body which represents only a small minority of the working men of Canada, and whose actions during the past year have been detrimental to the interest of Canada and to the working men themselves."

These two paragraphs go far to set out the present unfortunate labour conditions of the Dominion. I use the word unfortunate, because from Cape Breton on the east to Nanaimo (Victoria) on the west I heard the same complaints as to the attitude of labour. That attitude has in British Columbia resulted in the employers having to pay what is probably the highest wages paid anywhere for unskilled mining labour. Strikes are frequent. The Canadian workmen have allowed themselves to be brought under the influence of the trade unionism of the United States, and so-called "sympathetic strikes" are of frequent occurrence. Men leave work "without rhyme or reason." As a case in point, mention may be made of a comparatively recent strike at the collieries of the Crow's Nest Pass Coal Company on the 11th day of February, 1903, when all the men both inside and outside, having formed a new union, ceased to work, but never notified the company they had struck, waited upon the company with any demands, or given any reason for their actions. The Minister of Labour sent his Deputy to Fernie to try and arrange matters, but unsuccessfully. The Provincial Mining Association of British Columbia appointed a committee of six to endeavour to settle matters, which finally resulted in an adjustment. But this sort of thing is happening from time to time, although in the case named it is claimed that the miners in the company's employ are the best paid miners in the world, their average earnings for the five months in 1903 amounting to 4.71 dols. per day of eight hours, divided as follows:—At Morrissey, all mines,

4.64 dols. per day; at Michel, 4.87 dols. per day; at Coal Creek 4.63 dols. per day. This average equals 19s. 8d. per day.

Another example may be cited. Some three years ago the Alexandria Mine, on Vancouver Island, was closed for various reasons. The mine-owners allege that those reasons were mainly the United States duty of 67 cents per ton on imports of coal (most of the coal was shipped to San Francisco), the eight hours' law, the Provincial 5-cent tax, and the discovery of oil in California, and its substitution for coal. The miners, on the other hand, claimed that the real cause of stoppage was the demand of the management that 2,800 lb. should be a miner's ton, instead of 2,352 lb. as formerly, and that nothing should be allowed for "turning" places in the mine.

As an indication of the power of labour, it may be added here that Nanaimo is represented in the Provincial Legislature by two Labour members, and the seat in the Dominion Parliament is filled by the secretary of the Miners' Union.

While the Canadian railway companies have no reason to love trade unionism, especially after their experience of them at Vancouver in 1903, fair-minded men admit that they have a useful function, which is sometimes as much in the interests of employers as in those of the employed. As a case in point, I was informed by one of the officials of the Canadian Pacific Railway that the Unions keep the men up to a high standard of *morale* and of efficiency. If a man is found under the influence of liquor while in charge of an engine he is warned, not by the company, but by his own union, and if the offence happens a second time, the man is discharged, and is repudiated by his union.

CHAPTER XXV.

The Remuneration and Hours of Labour.

The labour conditions of the Dominion are in some respects remarkable, if not unique, and they form an interesting and instructive study to the business man and the political economist. They demonstrate to the fullest extent the great influence on wages that is liable to be exercised, first by proximity to a country in which the range of wages is usually, or rather unusually, high, and they also make it clear that new communities, in which the demand for labour is likely to exceed the supply, must count on having to pay a heavy labour bill, more especially when their location is distant from the usual sources of supply.

In the Dominion the rates of wages vary greatly. In the Eastern Provinces of Quebec, New Brunswick and Nova Scotia, the general rate is probably not much higher than that of English manufacturing centres. In the more remote Provinces of Manitoba and the North-West, the rates are at least 30 per cent. to 40 higher than in the East. On the Pacific, they are higher still, and in some cases they rise in British Columbia to a level that is almost, if not quite, equal to that of kindred labour in South Africa and the Australian continent. In a word, British Columbia can go far to establish its claim that it pays, in some cases at least, the highest wages for mining labour paid anywhere in the world, the average wages for coal mining labour being at certain collieries in the Crow's Nest Pass Coalfield as much as 19s. 8d. per day, or close on £6 per week.

This condition of things is all the more remarkable when we remember that there is a considerable amount of Asiatic labour employed in British Columbia, where wages rule the highest. The population of this Province in 1901 was 178,657. Of this number 14,201 were Chinese, and 3,516 were Japanese. The Chinese are mainly employed as domestic helps. They also work about mines—on the surface always—in lumber mills, and at general labour. Where the general range of wages is so high, they are, of course, well paid, but not so well as white labour by at least 20 per cent. In some cases they get large earnings as cooks. At the Vancouver Hotel, belonging to the Canadian Pacific Railway, I was told that the head cook is a Chinaman, who is paid £300 a year. This comes little short of the salary paid to the great exponent of the culinary art in former days at the Reform Club.*

Again, the highest wages appear to be paid where the industries are the most isolated, and where, consequently, the command of labour, and conversely the certainty of regular work, are the most precarious. The highest wages that came under my notice were those paid at the

* The first great *chef* at this club was paid £450 a year.

collieries of the Crow's Nest Pass in the Rocky Mountains; the next highest at the Nanaimo Collieries, on Vancouver Island; the next, again, at the Granby Copper Mines and Smelter, at Grand Forks. In all of these cases the locality is isolated, and workmen have to take the chance of finding employment at their own special calling, if they go to seek for it. If no hands are wanted, they may go without such work as they should be able to make the highest wages at for a long time.*

The various schedules of current wages that were placed before me while I was travelling through Canada, satisfied me that in the west the general rate of wages, despite the considerable employment of yellow labour, was, as I have already stated, higher than the rates paid in the east. In Nova Scotia and Ontario, I found skilled labour, such as carpenters, joiners, masons, plasterers, and plumbers, being paid 2 to 2.25 dols. per day; but in the west the same hands were paid 3 to 3.5 dols. per day in the towns, and more in the isolated country districts.

The Remuneration of Labour in the Coal and Iron Industries.

I had the opportunity afforded me of enquiring on the spot as to the rates of wages paid in the coalfields of Cape Breton, Crow's Nest Pass, and Nanaimo; and I have been so fortunate as to secure authoritative schedules of the wages paid at the greatest, and probably the controlling, iron works in the Dominion, as well as at some engineering plants, both in Nova Scotia and in British Columbia.

Before proceeding to speak of the wages paid to-day, it may be of interest to speak of the wages paid in Canada a quarter of a century ago. The following details are taken from a reliable source† :—

A general rate for miners was 1 dol. 20 cents to 1 dol. 30 cents per day, according to the work in which the miners were engaged. They were often furnished with cottages at the rate of 1 dol. 50 cents per month. At the Chaffey and Yankee mines, in South Crosby, the men were being paid by the month, getting from 20 dols. to 26 dols. besides their board. This, allowing twenty-six working days to the month, would be at the rate of from 77 cents to 1 dol. per day besides board. The men employed in connection with the St. Francis (Rivière aux Vaches) furnace and charring ovens received an average of 1 dol. 25 cents per day, without board. About the same price was also paid to the men engaged in collecting ore. At the St. Maurice forges wages were very low, an ordinary labourer getting in some cases as low as 70 cents a day, and boarding himself. The men engaged in collecting bog-ore were being paid 30 cents for every *barrique* of ore taken out. The furnace-keeper and charger received 28 dols. per month, and the other men employed in connection with the furnace 22 dols.

At the Acadia mines, Londonderry, ordinary labourers received from

* I found at the Phœnix mines (British Columbia) a young fellow who had three months before come out from Durham, where he was a skilled coal miner. It cost him £15 to get out, and when he arrived at Phœnix they could only give him a common labourer's job until a vacancy occurred in his own special line—of course, at much less than the wages he expected.

† Paper read before the Canadian Mining Institute, 18—.

1 dol. to 1 dol. 30 cents, and miners about 1 dol. 50 cents per day. The latter, however, were generally paid by the ton of ore extracted, and made from 40 dols. to 45 dols. a month. The men employed in connection with the furnace were paid by the ton of pig-iron produced, the keeper getting 25 cents and the other 20 cents per ton. This, allowing the furnace to produce about seven and one-third tons per day, would be about 1 dol. 83 cents per day for the keeper, and 1 dol. 47 cents for those under him.

The cost of mining iron ore (getting and bringing to bank a ton of ore), of course depended upon the character of the ore and the enclosing rock, the position of the mine, the depth of the workings, the necessity of pumping or otherwise, the cost of labour, and other contingencies. In prospectuses it has often been put down at 75 cents per ton ; but it would be difficult to find cases where ore requiring blasting was mined for less than one dollar per ton, even under the most favourable circumstances.

It will be noted that at the time to which these figures refer, the general rate of wages in the east did not greatly differ from those now paid in the chief industrial centres of England.

The conditions under which coal is produced in the Crow's Nest Pass field, British Columbia, are in some essential particulars quite exceptional. The cost of labour is extremely high, to begin with. The annual report of the Crow's Nest Pass Coal Company for the year 1902 contains the following figures illustrating this point :—

Year.	Hands employed.	Wages paid. Dols.	Average wages per head. Dols.
1901	1,312	911,407	698
1902	2,039	1,111,068	545

These last figures correspond to £139 and £109 per employé per annum, which, of course, is much higher than any European average. The labour cost of the coal produced for the same years works out from the report as under :—

Year.	Tons raised.	Wages paid. Dols.	Average wages per ton raised. Dols.
1901	425,457	911,407	2.14
1902	442,049	1,111,068	2.50

A disturbing element in this case is the fact that the wages paid includes what was expended at the coke ovens, where 125,085 tons in 1901 and 121,000 tons in 1902 were produced. The cost of producing coke is not stated, but if it be taken at 1s. 6d. per ton, which is above the average cost in the United States, it reduces the pay-roll of 1902 by £9,075, which would bring the average wages cost of the coal produced in that year to 10s. per ton. This, of course, is assuming that the figures supplied by the company apply to the mining of coal only, but it is proper to observe that the company speak of additions to plant and development work at Coal Creek, Fernie, Michel, and Morrissey, involving a total outlay of over a million dollars, of which machinery and supplies came to 729,617 dols. Suppose the difference

of 300,563 dols. to have been expended in labour, and to be part of the sum of 1,111,068 dols. already given as expended on that item, the amount spent at the collieries and coke ovens would still be 810,505 dols., which is not far from 2 dols. per ton of coal raised.

So far as labour at the other end of the Dominion is concerned, Mr. Baker, the general manager of the Dominion Company when I was at Sydney, has been good enough to give me the following particulars, to which I have added comparative figures for Pittsburg in the United States as ascertained by myself in 1901 :—

Wages paid at Coke Ovens at Sydney per shift compared with Connellsville.

	Sydney, N.S.	Pittsburg District (Connellsville).
	s. d. s. d.	s. d.
Coke loaders	5 8	6 0
Oven heaters	7 8	8 0
Hookers	6 6	5 6
Quenchers	6 0 to 7 0	8 3
Labourers	5 8	5 6

Wages paid at the Dominion Iron and Steel Works in October, 1903.

Iron Works.	s. d.	s. d.
Keepers...	11 0 to	11 6
Turnmen	7 0	
Labourers	5 6 to	6 0
Machinists	9 0 to	11 0
Blacksmiths	7 0 to	11 0
Carpenters	7 0 to	10 0
Pattern-makers... ...	9 0 to	13 0
Boiler-makers	8 0 to	11 0
Moulders	8 0 to	13 0
Machine-shop helpers*	7 0	

Steel Works.	s. d.	s. d.
Furnace helpers ...	8 0 to	10 0
Melters	20 0	
Rollers	21 0 to	23 0
Blooming-mill men ..	7 0 to	11 0
Coke Ovens.		
Coke loaders	5 8	
Oven heaters	7 8	
Hookers and quenchers	6 6	
Common labourers ...	5 8	

Wages paid to Mechanics per day of 10 hours in 1903.

	Sydney, N.S.	Pittsburg.
	s. d. s. d.	s. d. s. d.
Machinists	9 0 to 11 0	9 5 to 11 6
Blacksmiths	7 0 to 11 0	6 0 to 7 0
Carpenters	7 0 to 10 0	9 0 to 10 6
Pattern-makers	9 0 to 13 0	10 6 to 12 6
Boiler-makers	8 0 to 11 0	9 0 to 11 6
Moulders	8 0 to 13 0	9 0 to 13 6
Machine-shop helpers	7 0	8 0 to 9 0

So far as Ontario is concerned, the iron and steel works of that Province employed in 1902 only 1,114 in all categories. These earned on an average over the year £99 5s. 0d., against an average wage of £98 10s. 0d. in the previous year. The average consumption of iron ore and scale and mill cinder per ton of pig produced was 1·8 tons.

I have made the following comparison of the blast furnace labour in Nova Scotia with those of corresponding labour at Pittsburg and at Middlesbrough (England) per day :—

	Sydney, N.S.	Pittsburg.	Middlesbro', Eng.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
Keepers	11 0 to 11 6	10 11	10 1½
Turnmen	7 0 to 7 6	8 4	6 6 to 8 0
Labourers... ...	5 6 to 6 0	6 0 to 7 6	4 1½ to 7 0

* Floormen engaged in assisting machinist with erection work.

In this comparison the figures for Nova Scotia have been furnished by the Dominion Iron and Steel Company, and those for Pittsburg and Middlesbrough are taken from the Report of the British Iron Trade Commission on "American Industrial Conditions and Competition." The figures may possibly surprise those who may have entertained the belief that English wages were much below those paid on the other side of the Atlantic, as well as those who are likely enough to have held the belief that Pittsburg wages were much higher than those of Canada.

Mr. Colin F. Jackson, the general manager of the engineering works at Vancouver, gave me some particulars of the wages paid at that establishment. Machinists earn per day 3½ to 4¼ dols.; moulders are paid about the same rates, and common labourers get from 2½ dols. upwards. The average day's work is nine hours. These are such high wages that I asked Mr. Jackson how they were maintained. His reply was "that labour in British Columbia is strongly organised, and the organisations are able to command high rates of wages, labour being none too plentiful. Hence they demand a minimum wage of 3½ dols. (14s. 7d.) per day for the worst men. But," he added, "while the unions maintain a high standard of wages, they also require a high standard of work and skill, and they are down upon any man who scamps his work or idles his time. The leaders of the unions are reasonable, well-informed men, who would support the employer against the workmen where necessary." Mr. Jackson's opinion is that in British Columbia "the sympathetic strike is a thing of the past."

The metalliferous miners of the Kootenay receive the highest wages paid to any class of workmen there, the minimum for unskilled labour employed underground being 2.50 dols. per diem, while in outside camps the minimum is 3 dols. per diem.

The Movement of Wages.

Not only are existing rates of wages high in Canada, but in some important industrial centres they have a tendency to increase. On the Canadian Pacific Railway a reorganisation of wage rates was recently made in respect of employees north of Lake Superior, which gave conductors of passenger trains 125 dols. a month instead of 108 dols. On lines east of the lake the increase was from 100 dols. a month to 110 dols. and 115 dols. Passenger conductors on branch lines were paid 90 dols. instead of 80 dols. a month. Through freight conductors, who were paid 2.75 dols. per hundred miles, received 2.90 dols. Through freight brakesmen were increased eight cents per hundred miles, making the rate 1.95 dols. The increase on way freight trains is about 10 per cent. all round. Baggagemen received an 8 per cent. advance, making their wages range from 53 dols. to 70 dols. a month. Yardmen's wages were advanced about 15 per cent., and so on.

"Fair Wages."

The Canadian Government appears to make a point of seeing that in all the work given out on its behalf, calling for the employment of labour, a standard rate of wages shall be guaranteed. Indeed, they

employ a "fair-wages officer," whose business it is to travel from point to point in order to make sure that this standard is conformed to. This officer is reported to have recently declared that "if Canadian employers of labour would consent to pay as high wages as employers paid in the United States the labour troubles of the Dominion would be speedily settled." This, surely, is a strange declaration for a Government official to make!

I have before me, as I write, some schedules of what are described as "fair wages" required to be paid in respect of contracts for schools, drill halls, and other structures called for by municipalities, or the Provincial or Federal Governments. These, in all cases, prescribe the hours of work per day and the rate of wages paid per hour, or per day, as the case may be, in respect of such contracts. It is hardly necessary to add that this insistence on a "fair wage" in official contracts goes far to determine the wages to be paid by private employers in individual arrangements.

Hours of Labour.

The hours of labour in the Dominion vary according to the locality and to the conditions of labour. In the East, they vary in what may be regarded as the same trades. For example, in London (Ontario), masons, stonecutters, and bricklayers work only eight hours; plumbers, gasfitters, painters and glaziers, joiners and carpenters, electricians, metal roofers, and sheet metal workers average nine hours; ordinary labourers, waggoners, and time-keepers work ten hours. But, speaking generally, the working day is one of nine hours.

On the Pacific Division of the Canadian Pacific Railway the following rules are in force:—

"The regular shop hours shall be from 7 o'clock to 18 o'clock the first five days of the week, with one hour for dinner between 12 o'clock and 13 o'clock, and on the sixth day the hours shall be from 7 o'clock to 17 o'clock from October 1st to April 1st, with the usual dinner hour; from April 1st to October 1st, on the sixth day the hours shall be from 7 till 12 o'clock.

"Time and a half shall be paid for working after the above hours."

The telephone operatives, who had a strike in 1902, arrived at the following agreement as to their hours and wages:—

"A day shall consist of eight hours. Time and a half will be paid for all overtime up to 10 p.m, and double time for overtime after 10 p.m., and double time for all legal holidays and Sundays, except that one member shall be in attendance each Sunday to attend to any work which may occur. The time of employés shall be reckoned from the time they report at the store room."

CHAPTER XXVI.

Employers' and Commercial Organisations.

The Canadian Manufacturers' Association.

By far the most important organisation of its kind in Canada is the Canadian Manufacturers' Association, which has now a membership of 1,272 in all parts of the Dominion, having increased to that figure from only 132 in 1899. Its activity may be measured in some degree by the fact that in 1902, 158 meetings of committees, etc., were held at the head office in Toronto. Its Executive Council embraces a large number of the most influential and representative manufacturers in Ontario, Quebec, Nova Scotia, New Brunswick, British Columbia, and Manitoba. It has tariff, commercial intelligence, parliamentary, railway and transportation, and other standing committees; it has a number of local branches; and it has local or provincial secretaries in each separate province.

The following exerpts from the constitution will give an idea of the objects and aims of this Association :—

Declaration of Principles.

1. The Canadian Manufacturers' Association is not opposed to organised labour as such, but is unalterably opposed to illegal acts of interference with the personal liberty of employer or employé.

2. The Canadian Manufacturers' Association disapproves of strikes and lockouts and favours an equitable adjustment of all differences between employers and employés by any amicable method which will preserve the rights of both parties.

3. No person should be refused employment in Canada, or in any way discriminated against on account of membership or non-membership in any labour organisation, and there should be no interference with any employé who is not a member of a labour organisation by members of such organisation.

4. With due regard to contracts, it is the right of the employé to leave his employment whenever he desires, and it is the right of the employer to discharge any employé when he sees fit.

5. Employers must be free to employ their work people at wages mutually satisfactory without interference or dictation on the part of individuals or organisations not directly parties to such contracts.

6. Employers must be unmolested and unhampered in the management of their business in determining the amount and quality of their product, and in the use of any methods or systems of factory management which are just and equitable.

7. In the interest of employés and employers of the country, no

limitations should be placed upon the opportunities of any person to learn any trade to which he or she may be adapted.

8. The Canadian Manufacturers' Association believes that Canadian labour unions should be incorporated national organisations, governed by Canadian officials and free from foreign control.

The meeting of 1902 was the thirty-second anniversary of this Association. The late President, in notifying this fact, stated that "in its earlier days it was small, and its doings were small. It came to Toronto; it met, and sometimes, perhaps, it was noticed in the Press and sometimes it was not; sometimes it got a good deal of notice in the Press and sometimes it didn't. But three years ago it was reorganised upon a new basis, and it has grown, and grown wonderfully since, and it has been giving its attention to manufacturing business and manufacturing industries. We are not manufacturers merely of articles of wood and stone, and iron and cotton and wool, and so on; we manufacture enthusiasm; we manufacture Canadian sentiment; we manufacture a feeling of pride in our country, and we manufacture a spirit of independence, a spirit of national pride. We have been doing that for some time, and the result is shown in an exhibition that has been given in Hamilton, and which the Premier had the honour of addressing on Monday, and which has been brought about under the auspices of the Daughters of the Empire."

Trade Sections.

The rules provide that the Association may "establish trade sections to be composed of those members of the Association engaged in any particular industry of trade. Such organisation shall be known as the ——— Section of the Canadian Manufacturers' Association."

The membership of such Section shall consist of the members of the Association engaged in the particular trade, who apply for membership in the section. The officers shall consist of a Chairman, Vice-Chairman Secretary, and an Executive Committee.

The officers of the Committee shall be elected annually by the members of the Section prior to the election of officers in the annual meeting of the Association.

Sections of the Association may deal finally with all matters affecting only their own industry or trade. They may also pass upon matters of general interest, and the result of their deliberations should be forwarded immediately to the Executive Council in the form of a recommendation to be considered by it or by the whole Association.

Ten per cent. of the fees of members of the Section may be drawn upon annually by such Section for any expenses connected with its own business without special application to the Association. If any further amount is required, special application must be made to the Executive and be passed upon.

Commercial Intelligence.—This Committee shall have power to deal with such questions as the metrical system, moneys, weights and measures; technical and industrial schools and schools of applied art; a national museum of manufactures and fine arts; expositions held in

Great Britain and foreign countries, and all information that will be beneficial to Canadian exporters.

This Committee shall establish a bureau of information to which members may apply at any time in order to procure reliable statistics as to imports, exports, the possibilities for extending trade, foreign contracts, tariff regulations, banking systems, etc.

INDUSTRIAL CANADA.—This Committee shall deal with all questions relating to the editorial and business management of "Industrial Canada," the official publication of the Association. Questions of general policy shall be referred to and passed upon by the Executive Council of the Association.

TARIFF.—The duty of the Tariff Committee shall be to hear, consider and act upon all applications from manufacturers who may desire the assistance of the Association where concerted action may be deemed necessary on behalf of any particular industry, or of the manufacturing interests of the whole country.

They shall be alive to any changes in the Canadian tariff and watch the interests of Canadian manufacturers and exporters.

RAILWAY AND TRANSPORTATION.—The duty of the Railway and Transportation Committee shall be to endeavour to bring about an equitable rate of freights on the Canadian railways and may be appealed to by any member of the Association who wishes to have a grievance redressed.

They shall give attention to all matters affecting transportation and communication which may, from time to time, become of importance to the trade and commerce of Canada.

PARLIAMENTARY.—The duty of the Parliamentary Committee shall be to give attention to all legislation affecting the interests of Canadian manufacturers.

COMMITTEES OF ENQUIRY.

The Association may, by by-law or resolution, provide for the appointment of Committees of Enquiry to enquire into any matter affecting the manufacturing import or export interests of Canada, and such committees may examine upon oath (which oath any member of said committee is hereby empowered to administer) any party who appears before them, and the evidence so taken may be used to assist the Association in arriving at a decision with reference to the matter under consideration ;

Engage in the work of developing and promoting the export trade of Canadian goods by such methods as may be considered desirable by the Association ;

Obtain information and statistics for its members, or for Canadian manufacturers and exporters, and render to them such other services or assistance as may be deemed advisable.

ARBITRATION POWERS.

The Association may provide by by-law for the appointment of arbitrators, members of the Association, to hear and decide controversies, disputes or misunderstandings relating to any commercial

matter which may arise between members of the Association or any person whatsoever claiming by, through or under them, which may be voluntarily submitted for arbitration by the parties in dispute.

Members assenting to an arbitration by an instrument in writing shall be understood to have submitted to the decision of the majority of the arbitrators appointed to hear the case and to decide upon the same.

The arbitrators appointed to hear any case submitted for arbitration as aforesaid may examine upon oath (which oath any one of such arbitrators is hereby empowered to administer) any party or witness who appears before them, and shall give their award thereupon in writing, and their decision, or that of a majority of them, given in such award shall be final and binding upon the parties.

Much more space has been devoted to setting forth the constitution of this Association than would otherwise have been allowed to the subject, because it is an organisation of an altogether exceptional character. In most countries, including Great Britain, it is usual for each industry or trade to have its own special organisation, but rarely to have a general organisation of all industries to act for all individually and collectively. It is possible that this system will supersede the present general organisation when the industries represented become stronger than they are to-day. But however that may be, the Canadian Manufacturers' Association, as at present constituted, wields great influence in many directions, both local and general, exercising on the Federal Legislature from time to time almost irresistible pressure and bending to its will the provincial legislatures as well. The policy of the Government, indeed, is largely framed on the demands of this Association, mainly, no doubt, because it is, unlike the usual conditions of a thinly-peopled country, completely organised, with local committees and secretaries in all the principal trade centres, whereby simultaneous pressure can be brought to bear on the Government in all cases where such a course is called for.

Boards of Trade.

A prominent feature of the commercial conditions of Canada is the numerous Boards of Trade established throughout the Dominion. These organisations correspond in character and in work to the Chambers of Commerce that are carried on at home. They are mainly occupied with questions relating to commercial drawbacks, and take action in such matters as excessive railway rates, legislative interference with commerce and industry, shipping freights and conditions, and many other kindred questions. Some of these organisations have a very large membership, that of Montreal, for example, being well on to two thousand, which is probably twice the membership of any similar city in the old country. The Presidency of a leading Board of Trade is one of the most coveted positions in the commercial life of Canada. The usual custom is to have a number of committees established in connection with each organisation, generally to deal with legislation, railways and navigation, freight rates, fisheries, mining, trade and commerce

BOARD OF TRADE BUILDING, MONTREAL.

generally, and civic affairs. The firm grip that most of the Canadian Boards of Trade appear to get of the principles of commerce, and of the conditions best suited to promote their industrial interests, is very remarkable. It is brought out in strong relief in their Annual Reports, which review the whole course of business during the previous year. As an example, the Annual Report of the Board of Trade of the city of Vancouver, which is now before me, extends to 128 pp., and is handsomely illustrated, although the Board was only established in 1887, and even the city itself had hardly an existence twenty years ago. This report enumerates thirteen different lines of steamers now plying to the city of Vancouver, announces the initiation of measures for the establishment of a Harbour Board, gives details of the progress of mining, of forestry, and of fisheries, banking, post office, harbour and shipping and Customs' returns, and many kindred matters. So is it with other centres of population. Indeed, there is a keen and healthy rivalry among these organisations as to which of them can do the best and the most for the commercial interests of the community represented. At most of the towns visited by the delegates to the fifth Congress of Chambers of Commerce, it was the Boards of Trade through whom the arrangements for receptions and entertainments were mostly arranged, and it need only be added that it was the Montreal Board of Trade, acting through its excellent President, Mr. Hodgson, and its highly efficient Secretary, Mr. Hadrill, that organised the Canadian arrangements for the Congress. Those arrangements were liberally supported by the Government, and the various railway companies concerned, all of whom appeared to naturally look to the Montreal Board, as the chief commercial organisation of the leading commercial city, to "see it through." A view of the new building of the Montreal Board of Trade is shown herewith. This seems to me to be a much finer and more roomy headquarters than any similar habitat in Great Britain. Indeed, until it moved into its new home in 1903, the premises of the London Chamber of Commerce, although ostensibly representing the commerce of the greatest commercial city in the world, were mean and squalid by comparison.

SECTION V.—DISTRIBUTION AND TRANSPORT.

CHAPTER XXVII.

Railway Transportation Conditions.

The contrasts apparent in the railway conditions of the United States and Canada are difficult to realise. While the area of the two countries is not greatly different, the United States have 210,000 miles of railway in actual operation, against only 19,000 in Canada, so that the one country has only one-eleventh of the railway mileage of the other. This contrast, however, striking though it be, is less so than that of the population, which in the United States is over 80 millions, against only about six millions in Canada, being a difference of one to thirteen. By the time that the population of Canada equals that of the United States, there is reason to believe that the railway system will not be far behind. No people could be more alive to the importance of developing their railway resources than the Canadians of to-day. Next to the encouragement of manufacturing industry by tariffs and bounties, transportation is the one prominent subject of public discussion. The newspapers are more or less full of it. The Federal Parliament is very often engaged in its consideration. The Provincial Parliaments of Quebec, Ontario, Manitoba, and British Columbia, have the subject frequently before them. The whole community is more or less permeated with the recognition of the necessity of cheap and ample railway facilities as a means to the development of the country.

Railway Facilities.

Although, in relation to its area, the Dominion has to-day a smaller railway mileage than any country of equally high civilisation in the world, yet in relation to its population it has a greater mileage than most countries, exceeding even the great mileage of the United States when measured by this test. Nevertheless, the railway resources are not what they should be, and many new schemes are on foot for their extension. The greatest boon that Canada has ever had conferred upon her was the building of the Canadian Pacific Railway, but it is declared that before 1910 Canada will have three, if not four, transcontinental routes. In 1903, that wilderness of thirty-five years ago, with its climate in which it was "supposed" no one could live, produced grain crops that taxed to their utmost the resources of the railways in the moving of the crop. When the Canadian Pacific was undertaken, about 1880, the entire population of the Dominion was just about that of the city of New York at the present time.

It would be difficult to submit any better evidence of the development of the Dominion since confederation than the statistics of the

railway system. Construction began in 1836, when there were 16 miles of road in operation, and there was no increase till 1847, when 38 miles were added. In 1850 the record stood at 66 miles. In the following decade the Grand Trunk was conceived and built, and in 1860, 2,065 miles of track were in operation. In the next five years 175 miles were added. In 1866 the total was 2,278 miles, and at this figure the system remained for three years. In 1870 the mileage was 2,617. About this time began the "battle of the gauges" and the reign of the subsidy hunter. The main systems were built on a gauge of 5 ft. 8 in. The theory was developed that a narrower and more cheaply constructed track would serve the needs of the country as well as the most costly broad gauge. A system of narrow gauge roads was planned by a Toronto syndicate, and, after much outpouring of words and printer's ink, the municipalities were got into proper form for voting

NEW BRIDGE OVER THE FRASER RIVER, NEAR NEW WESTMINSTER, B.C., SHOWING BURNT FORESTS IN DISTANCE.

aid. The Ontario Government was persuaded to begin the system of provincial subsidies, which was taken up by the Federal Parliament, and the Toronto and Nipissing and Wellington, Gray and Bruce roads were begun and built on the narrow gauge system. Events showed that the narrow gauge advocates were not entirely right, while the broad gauge advocates were partly wrong. In 1872-73, after a period in which its track had three rails and two gauges, the Grand Trunk, on its main system, adopted the standard 4 ft. 8½ in. gauge of the Continent, and later the narrow gauge lines were absorbed and widened by the Grand Trunk or the new Canadian Pacific. The discussion had awakened the demand for railway advantages, and, between 1870 and 1880, 4,241 miles were added to the system. The next decade saw the Canadian Pacific syndicate born and the transcontinental line finished, and, in all, 6,293 miles of new railway built. Between 1890 and 1900, 4,506 miles more were built, and a total of 17,657 miles was reached

Having had the opportunity of travelling over about 11,000 miles of the railway system of Canada, or something like one-half of the whole system, I naturally made observations as to its conditions which justify me in saying that the system is, under all the circumstances of the case, a very remarkable and creditable performance in the provision of transportation. Very few communities of any account are far removed from a railway station. The most important towns are really well served from the Atlantic to the Pacific, which means a distance of about 3,500 miles. The only matter that struck me as at all defective was the condition of some of the wooden trestle bridges, which is not entirely satisfactory, but these trestles must be displaced.

One of the legitimate claims of Canada is that it has a greater railway mileage *per capita* than any other country. The average in 1903 was one mile of line for every 316 inhabitants, which compares with one mile for every 400 in the United States, and one mile for every 1,910 in the United Kingdom. Notwithstanding this satisfactory relative position, the people of the Dominion feel that they are a long way from having attained the standard required, and, as stated in the last Annual Report of the Canadian Manufacturers' Association, they feel that "only a wise and progressive transportation policy can keep pace with the present rapid growth."

Railway Business.

The general features of railway business in the most populous parts of the Dominion are indicated by the conditions presented by the Grand Trunk Company, which, in 1902, carried 4·6 million passengers and 6·1 million tons of freight and live stock, the average receipts per ton being 5s. 8½d., and the average earnings per train-mile being 6s. 1½d. The average rate per ton-mile charged for the whole business was 0·32d., which is the same as in the previous year. The percentage of working expenses to gross receipts was 70·23, and the expenditure per train-mile was 4s. 2·6d.

The figures which have just been presented go far to illustrate the exceptional character of the railway business of Canada. Here we have a system with a mileage of 3,558 miles, running through the principal cities of the Dominion, and reaching right up to Chicago, where it might be expected to tap one of the best sources of traffic on the American continent, and yet its freight traffic is not much over six million tons for the half year, or, say, 12 million tons per annum. This is, of course, an almost ridiculous figure compared with the traffic carried on British lines of more or less similar mileage, such as the London and North-Western, the North-Eastern, the Midland, and the Great Western, whose traffic ranges from 30 million to 40 million tons a year. On the other hand, the conditions of the traffic are greatly different in respect of the average haul, which on British lines is not much over thirty miles, and on the Grand Trunk, in 1902, was not less than 217 miles, or almost twice the average haul on American lines.

The conditions under which the passenger traffic of the principal lines, including especially the Grand Trunk and the Canadian Pacific Railway, is carried, leaves little to be desired from the passenger's point

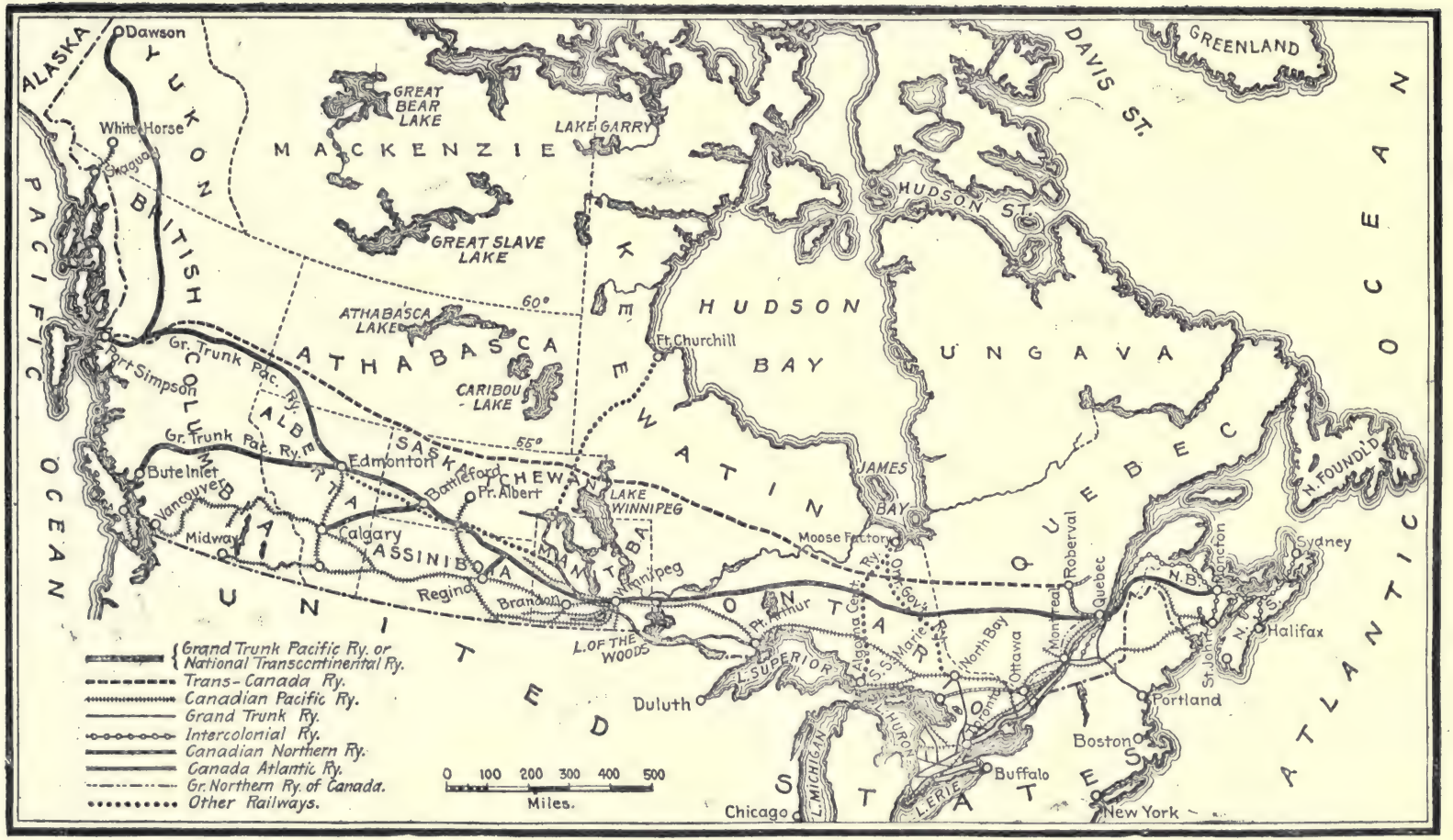


FIG. 1.—MAP OF GRAND TRUNK PACIFIC RAILWAY AND OTHER PROJECTED CANADIAN TRANSCONTINENTAL LINES.

of view. The rolling stock and the road bed are usually good, the Pullman cars are models of comfort and luxury, the service is assiduous and competent, and the whole system is animated and controlled by enterprise and by that attention to matters of detail which makes railway travelling a pleasure. Most of the officials are men who have had their earlier training in England, but some of them have had the advantage of supplementing this training by American experience.

The total Grand Trunk mileage, including sidings, at the end of 1902, was 4,990 miles, of which at that date only four miles were still laid in iron rails. This is, perhaps, a smaller proportion of iron to steel track than can be found in any other country, either absolutely or relatively, and it clearly denotes that the system, although far from being a new one, is fully up to date in its equipment.

Very few railways are now built in the Dominion without a subsidy from the Federal Government, and most of them have had, or expect, subsidies from the several Provincial Governments as well. The Dominion Government began in 1883 to grant subsidies to lines each wholly within its own province, and up to the middle of 1902 nearly 53 million dols. had been so expended, of which 25 millions were paid to the Canadian Pacific Railway; 3,630,000 dols. to the Crows' Nest Pass Railway; and 500,000 dols. to the Grand Trunk for the rebuilding of the Victoria Jubilee Bridge at Montreal. The assistance otherwise afforded to railway construction has embraced Government guarantees of interest, the Government issue of debentures by way of loan to railway companies, the Government guarantee of railway bonds, the direct issue of Government bonds to railways with a first mortgage on the companies' properties, the guarantee of capital by the Imperial Government, the release of Government loans by placing them behind other loans, the composition of Government claims, the assumption of liabilities by the Government, the direct construction by the Government, and combined land and money grants.

Only two railways in Canada belong to the Federal Government—namely, the Intercolonial and the Prince Edward Island. These two systems embrace 1,503 miles, have a paid-up capital of 73¼ million dols., and in 1902 made only 57,000 dols. profit.

Since the Canadian Pacific Railway was opened, although only about ten years ago, much larger trains and heavier locomotives have become the rule. At that time a Canadian Pacific Railway locomotive standard was 65 per cent. rating on 100, but the Canadian Pacific Railway now uses 165 rating and 200 per cent. standard, on some heavy gradients of 5 per cent. The average gradient, however, is not more than 1 per cent., even in the Rocky Mountains.

Canadian and United States Railways.

The differences in the conditions of the railways of the Dominion and the United States may be illustrated by a comparison of the Pennsylvania and the Grand Trunk lines. The mileage under operation does not generally differ as between the two systems, being 3,671 miles in the case of the Pennsylvania—that is, of lines east of Pitts-

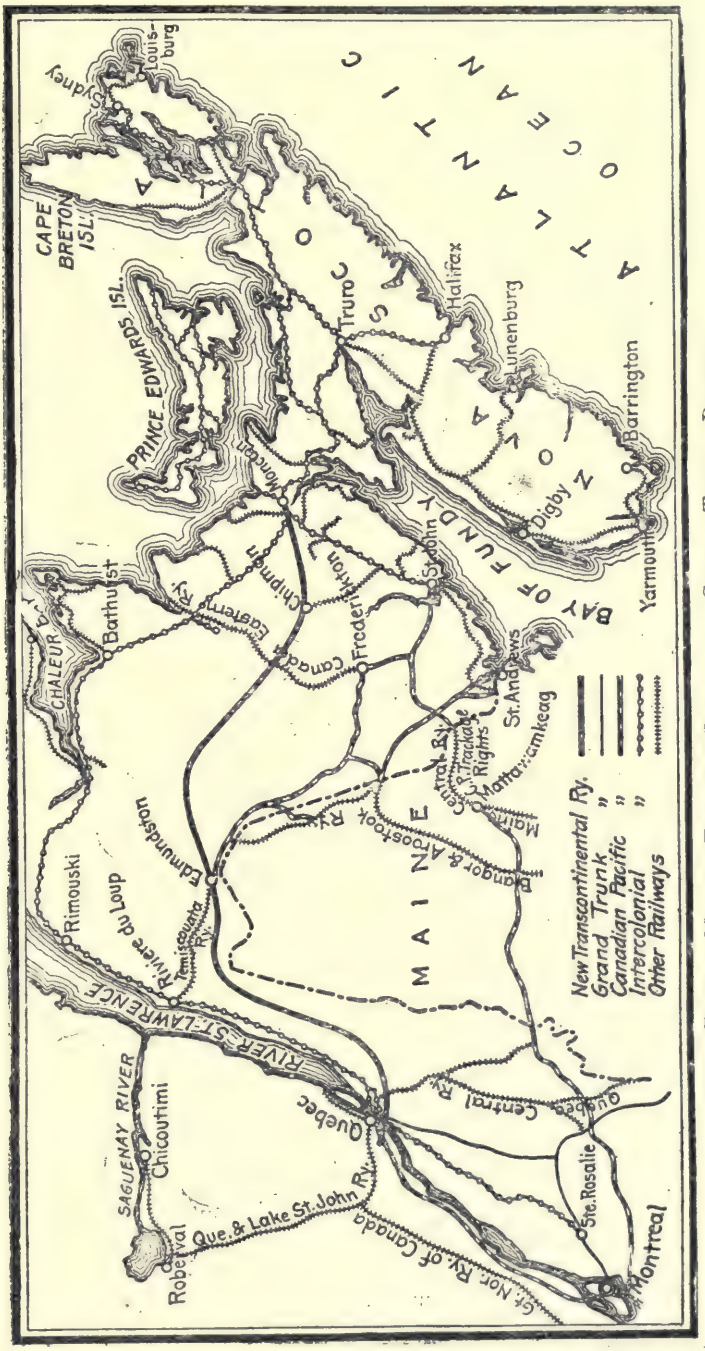


FIG. 2.—MAP OF EASTERN SECTION OF GRAND TRUNK PACIFIC.

burg, and operated directly—while the length of the Grand Trunk system is only 113 miles, or 3 per cent., less. And yet the Pennsylvania system carried about 122,000,000 tons of traffic, or an average of about 33,000 tons per mile; while the Grand Trunk carried only 12,296,000 tons, or an average of 3,450 tons per mile. In other words, the density of traffic on the Grand Trunk was little over a tenth of that on the Pennsylvania. This condition of things is reflected in the freight earnings per mile of road, which, in the case of the Grand Trunk, is only 3,934 dols., and in the case of the Pennsylvania is 20,129 dols., or over five times as much. The difference in the charge per ton-mile as between the two systems is very trifling, being only $\frac{3}{100}$ of a penny, and yet with an average ton-mile charge of only 0·291d. the Pennsylvania Company makes $\frac{1}{10}$d. per ton-mile profit.

Although it has more than twice the mileage of the Grand Trunk—7,321 miles against 3,558—the Canadian Pacific Railway carries a considerably less tonnage of traffic. Alike in flour, grain, live stock, and lumber, the Grand Trunk takes the lead. On the other hand, the Canadian Pacific leads in firewood and in manufactured goods. Both systems must before long vastly improve their traffic. It seems difficult to realise that so recently as 1880 the total quantity of traffic carried on the whole of the Canadian lines was only about 9,000,000 tons. This figure, twenty years later, had swollen to 36,000,000 tons, and in the next twenty years it may advance to even 100,000,000 tons, if the sanguine expectations of the people of the Dominion are realised.

Throughout the whole of the Dominion large schemes of railway extension are projected on every hand. The most important enterprise of all is the proposed Grand Trunk Pacific, which will be about 3,500 miles in length—from Monckton, in New Brunswick, to Port Simpson, on the Pacific—and is computed to cost over 100,000,000 dols. This railway will open up the great Peace River district, which is stated to have "extensive coal formations," as well as "deposits of gold, copper, iron, and silver."* The Canadian Northern Railway Company have in view the completion of another transcontinental railway, involving a present construction of 480 miles; the Coast-Kootenay line has been projected for a distance of 330 miles; the Medway and Vernon line is another enterprise, involving 152 miles of road. On the island of Vancouver it is proposed to extend the Esquimalt and Northern Railway to the north end of the island, a distance of 240 miles; and there is another proposal to build a line from Nanaimo to Alberni, which would considerably add to this mileage. The Kootenay Central Railway Company proposes to run a line from Fort Steel to Elko and to Golden, about 150 miles; and a new line is under way from Kitimaat, on the coast to Hazelton, about 100 miles. These are only a few of the railway enterprises looming in the immediate future, practically all of them, except the first-named, in British Columbia, which, although itself larger than Germany and Holland, is only about a ninth part of the size of the Dominion as a whole.

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* *Year-Book of British Columbia*, 1903, p. 319.

The Canadian railway system embraces 131 miles of coal-carrying lines, which in 1902 (to 30th June) carried 4,823,974 tons of coal, 48,055 tons of iron ore, and 32,500 tons of iron, in addition to other freight. There are twelve of these coal lines, some of them with numerous branches. The longest of them is the Sydney and Louisburg line, in Cape Breton, which has a length of 49 miles, and the Wellington Colliery Railway in Vancouver Island, with its branches, has a length of 20 miles. The weight of the steel rails used on these lines ranges from 30 to 60 lb. per yard, and they give employment to 52 locomotives and 985 wagons.

Domination of the Canadian Pacific Railway.

Fifty years ago the material interests of the Canadian West were mainly controlled by the Hudson Bay Company ; to-day the Canadian Pacific Railway is the most influential factor in all business and transportation affairs throughout the vast territory over which its influence extends. If you want to inquire about a choice parcel of land that seems well adapted for residential purposes, you find that it is the property of the Canadian Pacific. If you want to buy wheat-growing areas, or ranching grounds anywhere near to the railway, you must generally enquire for the Canadian Pacific. If you happen to put up at one of the finest hotels between the Atlantic and the Pacific, you will find yourself subject to the same influence. If you require to purchase a harbour frontage at Vancouver, you have again to deal with this Corporation ; if you desire to secure options on mining areas, the same potent factor must be reckoned with.

It will be seen that the Canadian Pacific Railway occupy many different fields of enterprise. They are a transportation agency, steamship owners on two oceans, locomotive and wagon builders, sawmill owners, the largest landowners of any private corporation in the world, dock owners and agents, mine owners, lumber merchants, hotel proprietors, restaurateurs, farmers, and much else beside. Indeed, in going over their system, and especially in British Columbia, it is difficult to think of any sphere of activity in which they do not move with a controlling influence.

Portland (Maine) is 358 miles from the commercial capital of Canada —Montreal. Halifax (Nova Scotia) is about 700 miles distant from the same city. The bulk of the traffic (in imports) sent into Montreal and Toronto go through Portland, and not through Canadian ports. The latter complain that the Grand Trunk Railway discriminates in favour of Portland. All Canadians whom I have met appear to regard as a matter for regret the supremacy of Portland, and the consequent dependence of the Dominion on the toleration of the United States in permitting goods to be bonded there. It will be remembered that Mr. Carnegie recently wrote in the *Times* that if Canada discriminated against American produce, the United States might possibly stop this privilege. The threat is not entirely new. It was definitely made by Grant in a Presidential message many years ago. But as this trade is profitable, it is argued on the other side that the Americans are not likely to "cut off their noses to spite their faces."

Railway Materials.

I was informed while travelling on the Canadian Pacific Railway, that a good deal of their rail supply had been purchased from the Carnegie Steel Company at Pittsburg, whose price, delivered, was materially under that quoted by British manufacturers, despite the fact that the freight charge from Pittsburg to Vancouver, or other points on the Canadian Pacific Railway, is more than that from Great Britain.

The value of the imports of rails and railway supplies into Canada varies greatly from year to year. In the period 1894–98 it did not average more than £318,800 a year, whereas in 1901 it was not less than £723,000. This latter figure, assuming an average of £5 per ton, would represent a total of 124,600 tons of railway materials. The great bulk of this was received from the United States.

CHAPTER XXVIII

Trans-Continental Railways and Railway Rates

The Canadian railway system, up to the present, has embraced only one line from the Atlantic to the Pacific, and until a few years ago, when the Canadian Pacific line was constructed, it did not even embrace that. Another Pacific line has now been resolved on, of which some particulars may be of interest, while other lines have been projected or talked about. Indeed, it may easily happen that within the next ten years Canada will have as many lines from ocean to ocean as the United States have at the present time. The Canadian through lines have some advantage in point of distance. It is computed that from Montreal to Port Moody by the Yellow Head Pass is 2,940 miles, and by the route adopted 2,890 miles. From New York to Tacoma by the Northern Pacific is 3,380 miles, and from New York to San Francisco by the Central Pacific is 3,270 miles. Hence, the railway through Canada is 490 miles shorter between ocean ports than either of the two lines in the United States.

Projects for a Second Trans-Continental Railway.

One of the first of the projects for a second trans-continental line was that of the Canadian Northern Railway Company, which has built and acquired a number of local lines. This company now has a line extending from Winnipeg eastward to a Lake Superior terminal at Port Arthur, and other lines extending north and west from Winnipeg. It has also a charter for a line as far west as Edmonton, with a view to eventually reaching the coast. During the year 1903 the Canadian Parliament extended the life of the charter granted in 1895 to the Trans-Canada Railway Company, which proposes to build a line on a northern route. Starting from Quebec it would use the Quebec and Lake St. John Railway to Roberval and Chicoutimi, on the Saguenay River (about 220 miles), and then start across the continent, keeping about 100 miles south of James Bay (Hudson Bay), to which a branch would be built, and passing to the north of Lake Winnipeg, with a branch south to the city of Winnipeg. Keeping north of the Saskatchewan district, it would then head for the Peace River Pass (2,000 ft.) or the Yellow-Head Pass (3,800 ft.) through the Rocky Mountains, and have its terminus at Port Simpson on the Pacific coast. A report on this project made by its chief engineer, Mr. A. E. Doucet, in February, 1903, stated that the grades in the mountains would not exceed 1 per cent., and that no trouble from snow slides need be expected.

In 1902 the Grand Trunk Railway Company decided to extend its system into the North-West Territory, and on to the Pacific. It already has a line running north 227 miles from Toronto to North Bay, on the Canadian Pacific Railway, and it was originally proposed to start the

new line from North Bay, carrying it to the head of Lake Winnipeg, and thence to Port Simpson (or Bute Inlet). This was afterwards modified to a route passing south of the lake and through the city of Winnipeg, and also including an eastern section from North Bay to Quebec. In March, 1903, there was incorporated in Canada (largely by the directors of and persons interested in the Grand Trunk Railway Company) a company under the name of the Grand Trunk Pacific Railway Company, with a capital of 75,000,000 dollars (since reduced to 45,000,000 dollars).

The following are the special features of this enterprise :—

1st. Construction by the Government of a railway from Moncton, New Brunswick, to Quebec and Winnipeg. 2nd. The construction by the Grand Trunk Pacific Railway Company of a railway from Winnipeg to the Pacific Coast at Port Simpson or Bute Inlet, with a branch to Dawson in the Yukon district. 3rd. Construction of the company's part of the line within five years. 4th. Equipment and operation of the entire line by the Grand Trunk Pacific Railway. 5th. The use of the railway as a "common highway" free to all Canadian railways subject to arrangement with the Government.

The length of the line will be approximately as follows :—

	Miles.
Halifax to Moncton (existing Government Intercolonial Railway) ...	186
Moncton to Quebec (new Government line)	368
Quebec to Winnipeg (new Government line)	1,400
Winnipeg to Rocky Mountains (new Grand Trunk Pacific Railway) ...	1,000
Rocky Mountains to Port Simpson (new Grand Trunk Pacific Railway)...	600
Total distance	3,554
Total distance to be built	3,368

The distance from St. John to Moncton, by the existing line of the Intercolonial Railway, is 89 miles, making a total of 3,457 miles from St. John to Port Simpson. The distances by exising routes from Halifax to Vancouver are as follows :—1. Intercolonial Railway to Moncton and Montreal, and Canadian Pacific Railway to Vancouver, 3,743 miles. 2. Intercolonial Railway to Moncton and St. John, and Canadian Pacific Railway to Montreal and Vancouver, 3,661 miles.

As to the construction of the Rocky Mountain section of the line, it is reported that an extremely favourable location can be made either through the Peace River Valley or the Pine River Valley, while the elevations of these two passes are remarkably low. A comparison of these elevations with those of other lines across the Rocky Mountains is given below :—

Railway.	Point of Maximum Elevation.	Maximum Elevation. Feet.
Grand Trunk Pacific	Peace River Pass ...	2,000
Grand Trunk Pacific	Pine River Pass ...	2,600
Canadian Pacific	Stephen	5,288
Great Northern	Summit	5,202
Northern Pacific	Blossburg	5,550
Union Pacific and Oregon Railway and Navigation Company	Sherman	8,247
Union Pacific and Central Pacific ...	Summit	7,017
Atcheson, Topeka, and Santa Fe... ...	Raton	7,623
Southern Pacific	Paisano	5,082
Denver and Rio Grande	Near Leadville ...	10,433

So far as the proposed New Grand Trunk Pacific Railway is concerned, it is held to be possible that the Canadian Pacific Railway can always maintain supremacy in the southern portion of the Province—that is, in a belt of territory four degrees wide and extending from the Rocky Mountains to the Pacific. There remains an area in British Columbia, north of the Canadian Pacific Railway "sphere of influence," seven degrees of latitude in width, north and south, and approximately 400 miles in length, east and west. That is to say, the area in British Columbia (*i.e.*, on the mainland), from which the New Grand Trunk Pacific may look for traffic, is 196,000 square miles in extent, and if the islands off the coast are included, it may be put in round figures at 200,000 square miles. All this immense region will be tributary to a railway crossing the Province by any of the routes proposed for the Grand Trunk Pacific. Over this route will be found the largest area of gold-bearing gravels in the world. The hydraulic mines of California have yielded over 100,000,000 dols. The auriferous gravels of Cariboo, Cassiar, and Omenica are estimated to be many times greater in extent than those of California lode mining. Lack of transportation alone prevents the development in Central and Northern British Columbia of many mines of copper, silver lead and coal. In the Bulkeley Valley, through or near which the Grand Trunk Pacific will run, is a large field of excellent quality coal, and other notable coalfields are found elsewhere in the same region. Superficial examination indicates that in Northern British Columbia, and just across the border in the Yukon, may be found oilfields equal to any in the world. The known deposits of iron are many, and there are many valleys admirably adapted for mixed farming, while there are hundreds of thousands of acres of the finest ranching grounds in the world.

It is proposed to adopt Port Simpson, in British Columbia, as the terminus of the Grand Trunk Pacific line. Here the main harbour is approached from the open sea—Dixon Entrance, through the Inskip Passage, half a mile in width, sounding from 13 to 29 fathoms. The Birnie Island and Harbour Reef protect the harbour from northerly and westerly winds. The harbour has a length of 3½ miles, with an average width of 1¼ miles; soundings from 13 to 29 fathoms, with good mud and gravel anchorage ground. One-third of a mile south of Inskip Passage is Cunningham Passage, 1,300 feet wide; soundings from 13 to 30 fathoms. This inner harbour has a length of 3¾ miles with an average width of 1,300 feet. It is entirely protected from all winds. The present population of Port Simpson is stated to be 250 of which 100 are white.

When in Montreal I was handed an interesting pamphlet showing the shorter distances from the great centres of population in both Europe and America to Japan and the East *via* the proposed Grand Trunk Pacific than by any other route. Briefly, the figures show that the new line will shorten the distance from Quebec by 525 miles; from Halifax (Nova Scotia) by 310 miles; from Liverpool by 310 miles; from New York by 418 miles, compared with the route by way of Montreal and the Canadian Pacific, by 555 miles compared with the route *via* Chicago and San Francisco, and by 1,800 miles than *via* Galveston and

San Francisco. Most other American centres of population will find the new route a shorter one than any other now open, but Great Britain will not only find it shorter by 393 miles than the present route *via* Montreal and the Canadian Pacific Railway, and shorter by 1,212 miles than *via* New York and Chicago, but it will also be somewhat shorter than the route *via* Moscow and the Trans-Siberian Railway.

The new Grand Trunk Pacific line practically begins at Quebec and terminates at Port Simpson, but the line from Quebec to North Bay, 525 miles, is already laid, and only the 2,500 miles between North Bay and Port Simpson remain to be completed. This port is 475 miles nearer to Yokohama than is Vancouver. It is also more than 500 miles nearer to the ports of China, Vladivostock, and Manilla than is Seattle or San Francisco, in the United States. Hence there is good reason to believe that this new route will command a large slice of the trade of the American continent, and perhaps also of Europe, with the East. This may mean in course of time a very large business.*

For the purposes of showing the need of the accommodation which the Grand Trunk Pacific is intended to supply, some details were got out, with a copy of which I was furnished at the offices of the company in Montreal. These show that in the North-West Provinces and Manitoba there are 386,500,000 acres of good land, of which 76,000,000 are pledged to railways, owned by the Hudson Bay Company, or used as Indian park and timber reserves, etc., and 12,500,000 are attached to homesteads, leaving 298,000,000 acres still unoccupied, "the greater portion of which is excellent farming land." To this should be added the unoccupied sections of British Columbia, extending over 200,000,000 acres more, "much of which is also suitable for farming and grazing." Here then is an area of farming land, equal to nearly seven times the total land area of the United Kingdom, which will be benefited by the new line. This fact may be better appreciated if it is added that the total acreage of all farms in the United States in 1900 was 841,000,000, so that North-Western Canada has equivalent to about five-eighths of the total farm lands of that country (not including Alaska) still unoccupied.

The potentialities of traffic in this region may be illustrated by a single instance. Some 5,586,000 acres in Manitoba and the North-West produced in 1902, as elsewhere stated, 60,000,000 bushels of wheat alone, or an average of 10 bushels to every occupied acre, not taking account of other crops, nor pasture lands. This is only 17,500,000 bushels less than the total quantity of wheat imported into the United Kingdom in 1902 from the United States.*

It is, of course, to be presumed that the land already occupied in the North-West includes much of the best of its kind, and it is probable that the fertility of that land is therefore more or less exceptional. But if it were taken that only one-fifth of the unoccupied areas referred to possessed similar fertility, that proportion only of these unoccupied

* The trade of the United States alone with China, Japan, Australasia, and the Philippines increased by over 60,000,000 dols. in imports, and by about 25,000,000 dols. in exports, between 1890 and 1902.

† There were, however, over 9,000,000 barrels of flour besides.

lands should produce more than sixteen times the volume of the crops already raised throughout the regions in question, or, in other words, the 60,000,000 bushels of wheat raised in 1902 should be increased to 960,000,000, plus the other crops now raised throughout the occupied areas. It cost the railways concerned—the Canadian Pacific Railway and the Great Northern Railway—a great effort to provide for the heavy traffic of 1902. How much greater the effort required to provide for a traffic of 960,000,000 bushels of wheat under the conditions suggested.

Transport Rates by Railway and Lake.

Canada shares with the United States the great advantage of cheap transportation resulting from the competition of the great lakes. In sending wheat from Manitoba or the North-West Provinces to either Quebec or Montreal for shipment to Europe, there is a choice of rail and water routes for the greater part of the way, and, as usually happens in such cases, the water conditions control the railway.

In order to get some authoritative information on this matter, I sought an interview in Montreal with Mr. Loud, the courteous freight traffic manager of the Grand Trunk Railway. Mr. Loud informed me that in the summer of 1903, the wheat rate from Chicago to Georgian Bay ports, such as Port Huron and Collingwood, was $1\frac{1}{2}$ cents per bushel, while the rate from there to Montreal was $4\frac{1}{2}$ cents, making a total of 6 cents per bushel for grain placed alongside steamers in the St. Lawrence. The water rate at the same time, from Chicago to Kingston, through the Welland Canal, was $3\frac{3}{4}$ cents besides the cost of transferring to barges, which is here necessary, and which costs $1\frac{5}{8}$ cent. There is, however, an extra insurance of $\frac{1}{8}$ cent per bushel for all water transport, so that the total all-water rate to the St. Lawrence is $5\frac{1}{2}$ cents per bushel, against a rate of 6 cents, by combined water and rail. The rail journey on this route is 860 miles. The insurance varies, and is sometimes as low as $\frac{1}{4}$ cent. The lake rate from Chicago to Georgian Bay ports has been as low as 1 cent per bushel. During the whole of the season of 1903, the rates have been $\frac{1}{4}$ cent per bushel more from Duluth to Fort William than from Chicago to either Buffalo or to Georgian Bay. The lowest rate in the season of 1903 from Chicago to Georgian Bay has been 1 cent. The difference in the rates as between Georgian Bay and Buffalo ranges from $\frac{1}{8}$ cent to $\frac{1}{4}$ cent per bushel.

Sometimes the water transport reaches extraordinarily low figures. Mr. Loud informed me that the Wolvin line of steamers had carried 65,000 bushels of wheat at $2\frac{1}{2}$ cents per bushel from Chicago to Quebec, the open rate of the same season having been $3\frac{1}{4}$ cents.

In the United States, the chief wheat-growing States are Dakota and Kansas. The rates from these States to the seaboard are regulated mainly by the rates at which tonnage can be got from Galveston to New Orleans. The Dakota rates are also more or less regulated in practice by the all-rail rates to Duluth, and by the rates thence, which are a fluctuating quantity. The Canadian Pacific wheat fields are west of Winnipeg. The distance from Brandon to Fort William is 636 miles,

and the rate on wheat for that distance is 14 cents per bushel. In some cases the wheat rate is quoted per bushel and in others per 100 lb., the latter being the United States classification, which generally governs Dominion traffic.

On the Canadian railways generally, the example of the United States has been followed in regard to increasing the weight of trains, of locomotives, and of freight cars. The locomotives on grain trains usually haul from 1,000 to 2,150 gross tons, the tare with grain averaging about one-third of the gross. The Grand Trunk Railway has lately been provided with a number of new steel hopper-bottom coal cars, to carry 100,000 lb. of coal, with an average tare of 38,300 lb. Another recent development is the use of new refrigerator cars with a tare of 38,400 lb., which are used to carry produce generally. The box cars used on the same system carry 60,000 lb. and tare 35,500 lb., while some recent live stock cars will also carry 60,000 lb. and tare 33,500 lb., but are usually loaded up to 10 per cent. above their maximum capacity.

A general indication of mineral freight rates in Canada is afforded by those on Winnipeg coal supplies. Pennsylvania supplies Winnipeg with 30,000 to 40,000 tons of anthracite coal annually, which is sent a total distance, from mines to place of consumption, of about 1,340 miles. Of this distance 917 miles is over the Canadian Pacific Railway, and the rate is 5 dols., while 423 miles represents the distance to Fort William, and the rate is 3 dols. These figures are subject to rebates.

T. O. Davis, of Saskatchewan, on August 28th, 1903, referring to freight rates, stated that as many of the new settlers in the West were from Iowa, he had inquired respecting freight rates in that State, where they were controlled by a commission, as compared with the Canadian West on the Canadian Pacific Railway. On units of 100 lb. the first-class freight rates were as follows in cents per ton-mile :—

Miles.	Iowa.	Canadian West.
30	·16	·27
50	·20	·35
100	·24	·54
200	·40	·20
450	·93	1·33

Similarly, Mr. Davis compared the rates on the Canada Atlantic in Eastern Canada with those on the Canadian Pacific Railway in Western Canada. On the former 27 cents carried 100 lb. 56 miles, and on the latter only 30 miles ; while 46 cents carried 100 lb. 363 miles on the Canada Atlantic Railway, and 54 cents on the Canadian Pacific Railway carried it only 100 miles. The freight rate from Toronto to Prince Albert, 2,000 miles, was 3·85 dols. a hundred. The Intercolonial carried freight 1,000 miles for 80 cents, while the rate from Chicago to New York was only 75 cents. Mr. John Charlton stated in the House, that if he were the Grand Trunk he would not build to Port Arthur. The Company could get an excellent harbour on Lake Nepigon. The road would carry wheat to Quebec 3 cents a bushel cheaper than it could be taken by part water and part rail route. He argued that a road with four-tenths of 1 per cent. grades could carry wheat cheaper than by water route, and quoted Mr. J. G.

Scott, manager of the Great Northern, as saying that they could haul on their road 45 cars containing 1,000 bushels each at 89 cents per train per mile. Putting it at 5·37 cents a bushel, on a grade of four-tenths of 1 per cent. the normal grade, and adding 50 per cent. for profit, the rate from Brandon to Quebec should be $4\frac{2}{100}$ cents a bushel. Between Chicago and New York, a distance of 935 miles, the all-rail route secures rather more than one-quarter of the wheat traffic. In 1891, out of about 45,500,000 bushels, 14,000,000 went by the all-rail route, and 31,500,000 by lake and rail. In 1902, out of 30,000,000 bushels, 8,000,000 bushels, or 26 per cent., went by the all-rail route. By 1910 the Canadian all-rail route should be working. A quarter of the wheat export of the Canadian West of 1910 should be a big business. Further, the lake and rail route will hardly be as tempting at Winnipeg as it must be at Chicago. A number of specially low freight rates have been found possible on particular stretches of track. For instance, wheat has been carried from Buffalo to New York—443 miles—for $2\frac{1}{2}$ cents a bushel. The Canada Atlantic Railway has been hauling wheat from Depôt Harbour to Montreal for rates which vary from $4\frac{1}{2}$ to $2\frac{1}{4}$ cents a bushel; the distance is 388 miles. Between Kansas City and Chicago—488 miles—a rate of 3 cents a bushel prevailed in 1900. If the Canadian rate between Winnipeg and St. John were made proportionate to the Buffalo to New York rate, it would be about $10\frac{1}{2}$ cents a bushel. If it was proportionate to the Canada Atlantic rate, it would be 10·85 cents. If it were proportionate to the Kansas City to Chicago rate, it would be $11\frac{1}{2}$ cents. The present rate from Winnipeg to New York by lake and rail, including insurance, is $16\frac{1}{4}$ cents.

The argument now being held by the Canadian wheat growers is, that while the American railways this year have carried wheat from Chicago to New York for a total charge of 9·65 cents a bushel, the Western American farmer must get his wheat to Chicago, whereas Winnipeg is actually in the Canadian wheat fields. At Kansas City, for example, wheat would pay nearly 13 cents a bushel to get to New York. Against this is set the ten, eleven or twelve-cent rate, which is believed, by the new line, to be practicable from Winnipeg to Quebec. Winnipeg, therefore, should have the better of Kansas City. Speaking generally, the new route should place places in the Canadian West on at least an equal footing with places in the United States in the same longitude.

Hitherto there has been no Railway Commission in Canada, so that differences or appeals on questions of railway rates and classification have had to be settled in a more or less haphazard way. A new Act has, however, been introduced in 1903, providing for the establishment of such a Commission, and as it has the support of most of the trading associations in the Dominion its final adoption may be regarded as settled. The Classification Schedules for Canadian roads are determined by a joint committee upon which the leading railways in Canada are represented. The classifications up to the present time have been determined without consulting the interests of the shippers, though they are legal only after receiving the approval of the Governor-General in Council. The last Classification Schedule ratified by the Governor in Council was that put into operation on January 1st, 1900; since that

time the railways have issued ten ruling circulars. In May, 1903, these with other changes were embodied in a new Schedule, No. 12, which was immediately put into operation without having received the approval of the authorities at Ottawa. This led the freighters to protest against the circular on the ground that they were allowed no voice in framing a classification which might either increase their business on the one hand, or ruin it on the other. These facts having been stated at Ottawa to the Acting Minister of Railways, that Minister refused his consent to the ratification of the new Schedule until the freighters of the country should have an opportunity to express their views. The Canadian manufacturers have strongly impressed upon the Government the advisability of allowing the new Railway Commission to deal with the whole matter.

Canada has greatly profited in her transportation costs by the experience of the United States in the past, and by the competition of that country in the present. Between 1866 and 1902 the cost of carrying wheat for export from Chicago to New York was reduced by over 80 per cent.—roughly, from a little over 23d. per bushel to a little under 4½d. per bushel. In other words, during the period referred to the cost of carriage by railway over a distance of about 1,000 miles was reduced 1s. 6½d. per bushel. West of Chicago the reductions were probably not less.

The cost of carriage from New York to Great Britain was reduced 2½d. per bushel—that is to say, from $3\frac{15}{16}$d. to $1\frac{7}{16}$d. per bushel. Altogether, therefore, the cost of carrying wheat from Chicago to Europe has been reduced during the past 40 years from about 27d. per bushel to about 6d., or a reduction of about 21d.

With adequate transportation facilities, there is no reason why Canada should not command the bulk of the export wheat trade of the world. Land is much cheaper and more prolific in the Canadian North-West and in Manitoba than in any part of the United States, convenient to export facilities. A large number of new settlers in Manitoba have sold their farms in the United States for 40 to 50 dols. an acre, and bought farms in Manitoba at 5 to 10 dols. an acre, although the American wheat crop only averages 16 bushels against 22 to 26 bushels in Manitoba. Such a difference of conditions, with a virgin soil, must secure supremacy for the Dominion in the world's wheat markets in the long run. This means, of course, that in Canada railway transportation and population must greatly and rapidly increase in the near future.

CHAPTER XXIX.

Canadian Waterways.

General Survey.

Having regard to her limited development and population, Canada has done more than most communities in providing herself with artificial waterways. In the period between 1868 and 1902, she expended about 63 millions of dollars on this object. The total length of her system is comparatively short, being no more than 74 miles, of which about 27 miles belong to the Welland and about 34 miles to the Lachine, Soulanges, and Cornwall Canals. The total annual revenue hitherto received has also been comparatively unimportant, the maximum of any single year having been 511,000 dols. so far back as 1874, while the revenue in 1902 has only been about 60 per cent. of that figure. Indeed, the annual revenue does not yield one-half of 1 per cent. on the total capital expenditure, which, from first to last, has exceeded 101,000,000 dols. But this was not the primary object of the construction and is not now the only object of the maintenance of the canals of the Dominion, which have been designed to provide and to maintain a complete through water route from the head of Lake Superior to the Straits of Belle Isle, a distance of well on to 3,000 miles, and to a large extent this end has been attained.

Within the last twenty years it was found necessary, in order to meet the competition of the Erie Canal route, to reduce the Canadian canal tolls and harbour dues. Prior to 1884, the rate of tolls on the grain shipped by way of the Welland Canal was 20 cents per ton, which allowed a vessel to pass through the St. Lawrence Canal without additional payment. But as the tolls on the Erie Canal were abolished in 1883, it became increasingly difficult for the Montreal route to compete with that *via* the enfranchised Erie Canal to New York.

A remission of one-half of the tolls on grain has, therefore, since 1884, been allowed on the Welland Canal, so that the rate has been only 10 cents., or 5d. per ton. Other concessions have since been made, until the rate was reduced to 2 cents per ton on grain passing eastwards to Canadian ports. This movement has had the effect of stimulating the canal traffic. The quantity of grain carried into Montreal by railway was, in 1885, about 3½ million bushels more than that carried by canal. In 1886, however, the canal carried nearly 5,000,000 bushels more than the railway.

The canal which Canada has constructed at the Sault Ste. Marie has now been in operation for over ten years, and is carrying yearly a largely increasing traffic. The possibilities of this route are very great.

The Welland Canal.

In order to understand the importance of the Welland Canal, it may be explained that the waters of Lake Erie empty into Lake Ontario through the Niagara River and over Niagara Falls. The difference in the level of the two lakes cannot be stated with exactness, and the influences which cause the variations in the height of water in the two lakes are not identical. It is, however, as nearly as can be ascertained, 327 ft. The course of the Niagara River is due north, and its current is swift and turbulent. The Welland River flows nearly at right angles with the Niagara River, and discharges into it at Chippewa, a village about two miles above Niagara Falls. It is navigable for deeply-loaded vessels for a distance of 40 miles or more, and has scarcely any current. The Grand River flows south-easterly, and empties into Lake Erie. Port Maitland, one of the safest harbours on Lake Erie, is situated at the mouth of the Grand River. Port Colborne, another secure harbour on the same lake, is about 18 miles west of the upper end of the Niagara River. Port Dalhousie, on Lake Ontario, is about 11 miles west of the mouth of Niagara. The desirability of connecting the two lakes by navigable water was, very early in the history of the country, admitted by all who gave the matter attention. Surveys were made from time to time, and various plans were proposed and discussed, but nothing definite was done until, in 1824, a company was incorporated under the name of the Welland Canal Company. Their first intention seems to have been to establish a line of communication between the two lakes by a combination of canal and railway, the canal to be of comparatively small capacity; but this plan was soon laid aside, and it was determined to secure water communication throughout the whole length, and to build a canal sufficiently large to admit schooners and sloops.

It has been doubted by many men who have carefully studied the question whether the very large expenditure that has been incurred over the Welland Canal will ever be justified by the result. The canal is, of course, the main connecting link between the great lakes of the south and south-west and the principal maritime outlets of the Dominion, and the Dominion Government has no doubt been animated by the belief that the time would come when the great commerce that now passes from Duluth, Chicago, and other ports in the United States to New York, and thence to Europe, would take the Welland Canal route instead of the Erie Canal or the railway, thereby making Montreal the chief port on the American Continent. This impression has been supported by the consideration that Montreal is nearly 300 miles nearer to Liverpool than New York.

Projected Waterways.

A new northern waterway, which is intended to connect what are known as the Upper Lakes of the United States with the Lower St. Lawrence River, is now projected for Canada. Competent engineers have reported that such a canal is not only feasible, but can be completed at a cost which will not exceed £15,000,000. The estimated expenditure would permit the minimum depth of the waterway to be

22 ft.—sufficient to allow the passage of a vessel having a carrying capacity of perhaps 7,000 to 8,000 tons.

The name of the Montreal, Ottawa, and Georgian Bay Canal has been given to this project, which, it is reported, would include but a very small section of artificial canal, owing to the natural bodies of water on the route. Its western terminus would be on Georgian Bay, an eastern arm of Lake Huron. Georgian Bay is connected with the Sault Canal system by a natural canal called the North Channel, separated from the Canadian mainland by what is known as Grand Manitoulin Island, which shelters it from storms. Extending into Georgian Bay is the French River, which is the outlet of Lake Nipissing. East of Lake Nipissing are two or three smaller lakes of considerable depth, one of which is drained into the Ottawa River. This river would form one of the principal portions of the route. By taking advantage of this chain of natural waterways only 40 miles of artificial canal need be constructed.

This northern waterway would be much shorter than the existing route by the St. Lawrence and Lakes Ontario, Erie, St. Clair, and Huron. The direction of the Lower Lakes and the St. Lawrence is south-westerly from the sea, while the Ottawa River flows south-easterly from its head waters. Consequently, the Georgian Bay and Ottawa River route would entirely eliminate the upper portion of the St. Lawrence, Lakes Erie and Ontario, and the waterways connecting them. A vessel now going from Montreal to the Sault Ste. Marie—the gateway of Lake Superior and at the head of Lake Michigan—must cover about 1,200 miles. The distance from Montreal by way of the Ottawa River, Georgian Bay, and the North Channel is but 750 miles, a difference of 450 miles; but it is calculated that the time required to cover this distance would be much shorter, from the fact that so few delays would ensue, not only in passing through the canal section, but through the locks required.

The Canadian Government and the commercial community, have shown a large amount of approval for the proposed new waterway. They are the more favourable to it that they are now finding a much larger quantity of grain passing to Europe through Montreal, and they have every reason for believing that this traffic will largely increase in the near future. Indeed, not a few Canadians are sanguine enough to suppose that Montreal will before long control the grain trade of the American continent. It is also believed that the new canal would be likely to divert a large amount of the export grain trade which now reaches New York by way of Lake Erie and the Erie barge canal passing through New York State. For some years past the idea of increasing the capacity of this canal so that it may accommodate barges carrying at least 1,000 tons has been agitated. The estimated expense is at least £20,000,000. But it has been claimed that even with this improvement it could not compete with its Canadian rival, and that should the Montreal and Georgian Bay project be carried out, the improvement of the Erie Canal must be abandoned.

What is known as the "All-Canadian route" *via* Trent Valley Canal (Georgian Bay to Lake Ontario) has the advantage of shortening the distance to Liverpool by 730 miles as compared with the Erie Canal

route *via* New York, and by 250 miles as compared with the "Welland" route, and this is stated to be now nearing completion. It is already completed to a point below Peterborough, and it is estimated that £500,000 will complete the outlet to Lake Ontario, whence access to Montreal and the sea is provided by the St. Lawrence River and Canals.

The "Soo" Canal.

The most interesting canal in the Dominion is probably that which lies alongside the similar waterway of the United States at the Soo St. Marie, and connects Lake Superior with the St. Mary's River. So far back as 1852, the Canadian Government had surveys made with the view of the construction of a canal on the Canadian shore, and the execution of the project was recommended by the Canadian Canal Commission of 1871, but it was not until 1888 that the work was actually placed under contract. On the Canadian side of the St Mary's River there is a lock of 18 ft. with a chamber 600 ft. in length between the gates, 85 ft. wide, and narrowed at the gates to 60 ft. on opposite sides.

The difference in level between Lake Superior and the St. Lawrence at Montreal is about 600 ft., and fifty-five locks are required to overcome this, although the mileage of the eight canals on the route is but seventy-one The ordinary locks of the Canadian canals are 270 ft. long by 45 ft. broad, and 14 ft. on the sills, and the American locks at the Sault, as already mentioned, are 515 ft. long, 80 ft. wide, and 18 ft. on the sills. These locks are all built specially wide to accommodate the various classes of steamers and barges employed ; for it has been remarked that although in England the trade is arranged to suit the boats, in America the boats must be built to suit the trade, and the locks accordingly.

A Notable Power-House Canal.

Before leaving the subject of Canadian canals, it may be of interest to note the canal now being built to convey the water from the St. Lawrence River to the great electric power plant at Messena. This plant will include fifteen Westinghouse generators of 5,000 horse-power each—much the greatest order ever given for electrical purposes. At Messena the St. Lawrence and the Grasse Rivers are almost parallel streams, only three miles apart, the St. Lawrence being of some 36 ft. higher elevation.

The canal conveying the water from the St. Lawrence to the power-house is big enough to accommodate large lake vessels, and in the future a lock will probably be constructed to pass these vessels to and from the canal and the Grasse River. The deepening of the latter would make Messena both a lakeport and a seaport. The canal is 15,200 ft. long, 192 ft. wide at the water-line, and 18 ft. deep. To develop 75,000 horse-power, the canal will need to be widened to a width of 263 ft., and the Grasse River will have to be deepened.

General Results.

From the point of view of their traffic, it is impossible to deny that the Canadian canals have hardly been a success. Indeed, one might venture to go a good deal farther and say they have come very near to being a failure. The total tonnage carried on the Welland Canal in 1901 was only 620,209 tons ; on the St. Lawrence Canal, 1,208,296 tons ; and on the other canals, apart from the "Soo," rather over 1,000,000 tons, making less than 3,000,000 tons in all, and this is notwithstanding the very considerable expenditure undertaken of late years in deepening some of them. Their total traffic is less than a hundredth part of the mineral traffic carried on British railways, and about a twelfth part of the traffic carried on British canals.

CHAPTER XXX.

Shipping and Shipbuilding.

General Remarks.

The future of Canada is, in the opinion of not a few Canadians, not to speak of the natural aspects and conditions of the country, likely to be, to a large extent, associated with the progress of shipping and shipbuilding, which are among the oldest of Canadian industries. This conclusion is not unnatural, in view of the developments that have taken place in the United States. The internal commerce of the latter country is of vast extent, founded mainly on its splendid system of waterways. Two facts alone need be quoted in support of this statement—the first, that the tonnage of American vessels engaged in domestic trade is over five millions ; and the second, that the registered tonnage of ships passing through the Sault Ste. Marie Canal—from Lake Superior to the Lower Lakes—in 1902 was about thirty-two million tons.

Canada has a much larger water area than the United States, but as yet it is more or less in a condition of imperfect development. The day may possibly come when Canada will have as great a commerce on the great lakes as its neighbour. On the great Laurentian lakes alone—Lakes Superior, Huron, Ontario, and St. Clair—she has an area of about 100,000 square miles. These latter, with their connecting rivers and canals, give her the command of a complete system of navigation from the head of Lake Superior to the Atlantic Ocean, a total distance of some 2,384 miles. This system taps a large proportion of the principal towns and centres of trade in the Dominion—such towns as Port Arthur, Sarnia, Amherstberg, Port Colborne, Port Dalhousie, Kingston, Ottawa, Montreal, and Quebec. The shipping trade of Canada through her lakes and rivers is increasing, but hitherto the increase has been slow. The tonnage of ships on the Canadian register is decreasing, having in 1902 been less than one-half that of ten years before.

There are at present no shipyards on the Pacific Coast of Canada, but it has been contended that the increasing exports of timber from British Columbia point to the opening that exists for shipbuilding in the Western Province. It is argued that the efforts to found shipyards in the Maritime Provinces are largely designed to protect the lumber industry, which, having to depend mainly on American vessels for trans-shipment, suffers from an unfair discrimination. Last year British Columbia shipped to the African Continent, and to other countries beyond the Pacific Ocean, some 60,000,000 feet of lumber, while ports on Puget Sound (United States) shipped about 140,000,000

feet, of which 63,000,000 feet was sent to Australia. It is stated that if British Columbia were better equipped for dealing with the trade, Australia would probably have taken the bulk of these shipments. The difference now existing in the trans-Pacific freight rates between British Columbian and Puget Sound points, with the existing keen competition, makes a great difference, and results in a heavy loss of trade to the Province.

The Canadians are desirous to get rid of the decadent movement of their mercantile marine. They do not believe that it is necessary. On the contrary, they think that they can build ships as cheaply as they can be constructed anywhere in the world. They argue that if they can produce the cheapest iron and steel, as they claim to do, the rest is bound to follow. Hence they have of late years been desirous to establishing shipbuilding yards at a number of likely centres—St. John Halifax, and Sydney more especially. These and other towns have for years past been endeavouring to tempt capital to go into the shipbuilding industry by offering free sites, bonuses, exemption from local taxation, and other inducements, but so far without effect.

SHIPBUILDING.

At present there are only three steel shipbuilding yards anywhere in Canada. All three are on the Lakes. Two of them are on Lake Ontario, at Toronto. The third is at Collingwood, on Lake Huron. The bounty movement for the extension of the industry has not so far been successful. But it has been argued that it is not hopeless merely because of the few shipyards now at work, for in 1883, when the Dominion Government first began paying bounties on pig metal, there were only three small and old-fashioned furnaces in the Dominion, employing in the aggregate fewer men than are to-day at work at any one of the steel shipbuilding yards on the Lakes.

Mr. F. B. Polson, of Toronto, the principal owner of a shipyard there at which 400 men are now employed, contends that Canadians should have some aid from Government in meeting British competition for Lake vessels, and that, as the iron and steel trade is now aided by bounties, similar favours should be extended to Canadian shipyards on the Lakes and on the coast. "All we ask," said Mr. Polson, in putting forward this new claim on the Government, "is for enough to be granted to give us a fair field, so that the British shipbuilder cannot undersell us while the industry here is being established. It will not be necessary for this aid to be permanent. Conditions are becoming more favourable continuously, and the present is the time to take action. . . . . In granting a tonnage bounty Canadian shipbuilders desire sufficient aid to balance the difference between the cost to the ship buyer of a British-built and a Canadian boat."

Sydney, with the coming of the steel plant, had in eighteen months increased its population from 3,000 to 15,000. Sydney's new prosperity is at the bottom of the movement in the Maritime Provinces to boom shipbuilding. Nearly every little town with a frontage to tide water conceives that it is admirably adapted for the site of a steel shipbuilding plant.

Under the new Act of the Legislature, before a municipality can raise a loan to bonus a shipyard a poll of the electors must be taken, and at this poll only men who are assessed on real estate, or personal property, or pay income-tax, can vote. As to the conditions to be made with the promoters of shipbuilding undertakings, the law stipulates that bonuses shall be paid only in respect of plants at which ships of iron or steel, or any combination of metals, are built. To induce local capital to invest in ships, there is a provision that all steel vessels built in these bonus-promoted yards shall be free from municipal taxation—the only taxation to which Canadian-owned ships are liable—provided that they are registered at a Nova Scotia port.

The general law was not regarded as adequately meeting the case of Halifax. This city was so anxious for the establishment of a well-equipped shipyard on the harbour that it was prepared to go much beyond the 100,000 dols. bonus which may be given by any of the smaller towns on the coast. For Halifax, accordingly, there was passed a special Act, under which the municipality can give a bonus of 100,000 dols. in aid of the establishment within the city of "a first-class modern and complete yard and plant for the building of hulls of iron and steel ships, adequate to the construction of not less than 20,000 tons annually," and a sum not exceeding 25,000 dols. a year for four years as bounties on the tonnage launched from the yard. The general Act also applies to Halifax; so that the city can exempt the shipbuilding plant and the earnings of the company from taxation, and exempt the tonnage built from taxation, provided it is registered in Halifax.

Under existing conditions, if a shipbuilding company established works at Halifax they are assured of a total subsidy of 300,000 dols., provided the terms are fulfilled. There is the Government grant of 100,000 dols., and a standing offer of 200,000 dols., approved by the citizens of Halifax under the authority of a Provincial Act. If the company go across the harbour to Dartmouth they have there the offer of a municipal bonus of 100,000 dols., recently ratified by the citizens. If they establish main works in Halifax and branch works in Dartmouth they can earn 400,000 dols. of public aid. The conditions attaching to the Halifax bonus are these: One hundred thousand dollars is to go as a subsidy for establishing a modern and complete yard for building the hulls of iron and steel ships adequate to the construction of not less than 200,000 tons annually, and for establishing a machine and boiler shop fitted with plant sufficient for equipping such hulls with engines, boilers, and machinery. The second 100,000 dols. is to go in bounties of 2 dols. per ton for the steel sailing ships turned out, and 5 dols. per ton for the steel steamers, but the total bonuses of this kind are not to exceed 25,000 dols. per year. Thus the Halifax vote subsidises the yards and plant by 100,000 dols., and gives a bonus of 25,000 dols. for four years.

Dangers and Drawbacks of the St. Lawrence.

The truth is that the terrors of the liability to fogs and ice in the Gulf of the St. Lawence will probably continue to restrain shipbuilding,

as they have hitherto largely restrained shipping enterprise. It is not generally known that for the ten years from 1890 to 1900 there were wenty-eight absolute wrecks of ocean steamers in the St. Lawrence trade, and eighty-four strandings are recorded, at least fifty of which occurred between Montreal and Quebec, although this should be the safest part of the whole route, seeing that it is enclosed by land on either side, with abundant opportunities for a careful pilot to verify his course. The record of the season of 1901 was much more damaging than that for any previous year. Eight steamers and two large sail ships were lost on the Cape Race coast, while sixteen ships and a British man-of-war were stranded within the Gulf area. The war vessel—the cruiser *Indefatigable*—was plumped on a reef by a careless pilot, and her bottom was so badly injured that she could not be risked to cross the Atlantic, so repairs had to be made at Halifax, at a cost of 120,000 dols. Of the wrecks at Cape Race only six were bound to or from St. Lawrence ports. The losses to the insurance companies through these wrecks is stated to be at least 2,000,000 dols., and the strandings may have involved as much more. In the face of these facts it is not surprising that underwriters should regard the Laurentian route as a dangerous one, and assess a very different rate of premium upon traffic by it from that imposed upon trade *viâ* American ports. A leading Canadian Parliamentarian declared at Ottawa last Session that "the St. Lawrence route stank in the nostrils of the underwriters," and he further explained that leading shippers had informed him that while they could charter any number of tramp steamers to carry freights from American ports, they could not induce a fraction of them to venture up the St. Lawrence so evil was the repute in which it was held by owners. The number of tramps frequenting the Port of Montreal has grown smaller every year.

Quebec has the same story of a declining maritime commerce to tell. The whole future of Canada's water-borne trade has been exciting the most serious attention of the legislators at Ottawa and the Boards of Trade in the different cities interested. With the very laudable desire on Canada's part to undertake a fast Atlantic service, which should enable her to compete with the existing lines to New York, the frequency of disaster along the Canadian seaboard, including Newfoundland, which is geographically identified with it, is detrimental to the aspirations of those who hope to see ocean greyhounds speeding between Liverpool and Montreal. A fast line will be difficult to establish while the present discrimination against the route continues, and a better schedule of rates can scarcely be hoped for with ships meeting disaster as they have done.

Navigation Improvements.

The completion of various improvements now on hand will need an expenditure of about 4,000,000 dols., and an annual outlay for the upkeep of new lighthouses and fog stations of about 150,000 dols. Canada's canals and ship channels from the Lakes to the sea represent an outlay of 60,000,000 dols., and it is argued that unless much of the benefit of this is to be lost absolutely the main artery must be enlarged. It is further claimed that when this shall have been accomplished the regular

running of steamship lines between Chicago and Europe will be rendered as easy a matter, and one as devoid of risk, as the present transatlantic passage between New York and Liverpool.

Some of the leading lines previously trading there have withdrawn their ships from Montreal and made Portland or Boston their terminus. The Dominion Line sent their passenger boats to Portland and gave passengers free railroad transport from Montreal to that port. The Johnson Line went to Boston, and smaller concerns did the same. The Dominion Line, in recently pleading for the improvement of the St. Lawrence route, showed that the marine insurance rate from Montreal was 9 to 10 per cent., while from New York and Boston it was 4 to 4½ per cent. This resulted in a difference of 5,000 dols. per vessel in favour of American ports, and as the vessels going to Montreal made only five or six trips each season, it put the latter port under a disadvantage of 25,000 dols. to 30,000 dols. for the season for each vessel that plied there. The annual export of wheat from the United States is 250,000,000 bushels, of corn 200,000,000 bushels, and of barley, oats, and other cereals very large quantities. Yet the largest quantity of grain of all classes ever exported from the St. Lawrence in one year was 40,000,000 bushels. And that, too, in the face of the fact that for much of the grain of Minnesota and the Dakotas the Laurentian route represents the shortest, cheapest, and easiest line of transport between the two hemispheres.

The deepening of the ship canal in the St. Lawrence river from 25 ft. to 30 ft. is an essential improvement, for New York is now projecting a 40-ft. channel, and Boston has plans for a 30-ft. one. Montreal must be up and doing if she is to retain her trade, and it has been pointed out that while she is making the needed improvements she can with profit widen the fairway from 500 ft. to 600 ft. The thorough reform of Canada's pilotage system is also recommended, on the ground that the proportion of strandings through incompetent pilotage has been very great, and is doing as much as anything to injure the reputation of the route. Most of the pilots appear to be French Canadians, and it is said that the experience of shipmasters during the past few years has not been such as to inspire them with confidence in the capabilities of the Quebecker to satisfactorily handle an ocean liner in constricted waters.

Shipping of the Great Lakes.

In estimating the position of American shipping and shipbuilding, the importance of those industries on the great lakes is liable to be overlooked. The latest report of the British Vice-Consul at Chicago shows that the volume of business carried on by the great lakes of Canada and the United States is annually increasing. It has been claimed that this trade is of importance, not only to the United States and Canada, but also to Britain, by leading to a development of the canal system, whereby ships of considerable size are enabled to pass to the Atlantic shore, and from there to Britain and the Continent. In a recent year Chicago shipped by rail and lake 221,972,000 bushels of grain, and 5,421,000 barrels of flour, and of this only about 12 per cent. was shipped to Canadian ports; but with the opening of the improved

Welland Canal, giving a direct passage to the Atlantic for vessels of about 1,500 tons, it is likely that an increased quantity of grain will be shipped by that route.

In the Lake ports the Dominion has a more valuable asset, and a surer outlook. Mr. Peltier recently advocated strongly a large expenditure by the Dominion Government on necessary improvements to the Canadian lake port harbours, He argued that at a mere fraction of what the American Government has expended on the improvement of the harbours at Duluth and Superior, much better ports could be made at Fort William and Port Arthur. With the rapid development of the North-West and the increased business inevitable with the coming of the Grand Trunk Pacific, Mr. Peltier believes such expenditure to be not merely advisable, but necessary.

Canada appears, despite her British connection, to do a greater part of her shipping business through foreign vessels than most other British possessions, and, we might almost say, than most other countries. In 1902 the sea-going ships that entered and cleared from Canadian ports were 30,306, of 14,731,000 tons register, but of this total Canadian and foreign bottoms were 16 per cent. above British bottoms, the Canadian tonnage having been 1,937,000 tons, and the foreign 5,928,000 tons, against 6,865,000 tons that were on the British register.

The shipbuilding trade of Canada has fallen off very largely of late years, despite the increase in the general prosperity of the country. If we go back forty years, we find that the total shipping tonnage built and registered in the Dominion was 183,010. Twelve years later it had fallen to 22,516 tons, and in 1896 it reached its nadir, with only 16,146 tons, or less than an eleventh part of the tonnage built twenty-two years previously. This backward movement is mainly due to the increasing displacement of wooden ships, and to the fact that Canada had no home iron industry to stimulate a demand for modern shipbuilding materials.

SECTION VI.—INTERNAL AND EXTERNAL COMMERCE OF CANADA.

CHAPTER XXXI.

General Commercial Conditions.

The general commercial conditions of the Dominion have been largely dealt with in previous chapters. Those conditions are mainly made up of the resources of the country, its wealth, its area and population, its foreign trade, its shipping and railroad facilities and equipment, and some kindred matters. They also embrace the methods of doing business, the credit and banking systems, the capacity and the industry of the inhabitants, the extent to which the general organisation of industry and commerce is up-to-date, and to which the general economic system is suited to the needs and the progress of the country, including therein the fitness of the political system to respond to its requirements, as expressed by the commercial community from time to time.

Water Communication.

One of the most obviously important conditions that make for general commercial prosperity in the Dominion is the splendid system of water communication, extending from the head of Lake Superior to the Gulf of the St. Lawrence, a distance of over 2,500 miles. We can, following examples adopted in other cases, best realise what this system means by thinking of what it has done for the United States. It has been argued, and with much soundness, that the supremacy of Pittsburg in iron and steel production is only made possible by the transportation by water of ore from the Lake Superior region, a distance of about 1,000 miles, at an operating cost of 50 cents (2s. 1d.) per ton. This ore carried by rail would cost a minimum of 5 dols. (20s. 10d.), the water rate being just one-tenth that by rail. The waterways of the great lakes in the United States furnish transportation for over 40,000,000 tons annually, at a rate simply impossible in railway service. The greater part of this vast traffic is in the ores of the Lake Superior region.

Pittsburg coal, again, is carried 2,000 miles by the Ohio and Mississippi Rivers to New Orleans and the Gulf of Mexico at a dollar (4s. 2d.) per ton, paying a profit on its transportation. Railway freight would not be less than 8 dols. (33s. 4d.), which would simply be prohibitive, while in the other case it can be delivered at tidewater and compete successfully for the world's trade. A fleet of boats

towed by one steamer has carried 30,000 tons to New Orleans; an ordinary fleet will carry 12,000 to 20,000 tons. Moreover, the navigable streams of the great Mississippi and Ohio valleys carry a burden of over 30,000,000 tons annually, which is distributed from the headwaters of the Ohio to the Gulf of Mexico, and thence to the world's markets.

All this would be much more costly, not to say more difficult, if it had to be done exclusively by land transport. The lakes and rivers of the United States have made the country. Canadian lakes and rivers have equal possibilities. Indeed, Canada has a river system that is probably not excelled even by the United States, although it has not hitherto been possible to utilise it to anything like the extent of which it is capable.*

The river system of Canada is not less suited and favourable to the development of a great commerce than the lake system. Canada has some of the most remarkable rivers in the world to-day. The St. Lawrence is navigable for its whole length of 750 miles. The Ottawa, an affluent of the St. Lawrence, is navigable for a large part of its length of 550 miles. The St. John River in New Brunswick is 00 miles long, and is navigable for 250 miles. The navigation of the Mackenzie River has been computed at over 2,000 miles. The Fraser, the Athabasca, and the Thompson Rivers all lend themselves to navigation on a large scale. The Columbia, the Kootenay, the Peace, the Skeena, and the Stikine Rivers are all more or less navigable, and so with many others.

The total lake area of the Dominion extends over more than 80 million square miles, in all the Provinces except Franklin and Prince Edward Island. Ontario has a water area of about 26 million square miles; the Mackenzie a water area of about 19 million square miles; Keewatin a lake area of 8½ million square miles; Quebec a lake area of about 6½ million square miles; Manitoba, a lake area of over 6 million square miles; and Athabasca and Saskatchewan a lake area of over 8 million square miles. Compared with these figures, the lake area of British Columbia, amounting to over 1½ million square miles, seems almost insignificant, and yet this Province has seventeen different lakes, almost the whole of them navigable for a considerable commerce, and some of them, as I had the opportunity of ascertaining in my tour, by personal experience of the most delightful kind, with an environment of matchless beauty.

In order that this magnificent system of internal navigation may be the better understood, it may be stated that the lake area of the Dominion exceeds, by several million acres, the whole area of the British Isles, and that the lake area of Ontario alone is equal to almost one-third of the entire area of the United Kingdom, while the lake area of the Mackenzie is equal to considerably more than a fourth of the area of the Mother lands. When we remember what Lake Erie has done for Cleveland and Buffalo; what Lake Superior has done for Pittsburg and for the numerous towns on its shores in Michigan and Minnesota; and, finally, what Lake Michigan has done for Chicago,

* Further information on this subject is contained in Chapter XXX., which deals with "Canadian Waterways."

we may form some notion of what the Canadian lakes may ultimately do for the Dominion. In the United States there has for many years past been an increasing tendency to locate important industrial enterprises on lake frontages. Toronto's situation on Lake Ontario is an example of what may ultimately happen on most of the great Canadian lakes, with advantage to the country both locally and generally. Such lacustrine communities are almost always placed most favourably in regard to transportation, and in the case of towns and industrial centres located on the main system of lakes that lie between the head of Lake Superior and the Atlantic, the cost of transportation must always be relatively low, and the freighters must generally be more or less free from railway exactions and control.

The Use of American Ports.

One of the commercial conditions of Canada which is not entirely satisfactory is the fact that so much of the imports and exports of the country go through American ports. This is not quite so much from the point of view of placing Canadian commerce more or less under the control of the United States, and therefore in circumstances where that country might, if disposed to do so, prohibit the use of its ports, and withdraw the bonded privileges now accorded, although that has been threatened before now. It will be remembered that President Grant, in his message to Congress in 1880, referring to Canada seeking to protect the inshore fisheries of the Dominion, said: "I recommend you to confer upon the Executive the power to suspend, by proclamation, the operation of the laws authorising the transit of goods, wares, and merchandise in bond across the territory of the United States to Canada." Not only so, but Mr Andrew Carnegie, in a recent letter to the *Times*, intimated the likelihood of something of this kind being done if preferences were to be the order of the day against the United States. But apart from all this, which may be mere bluff, it is unsatisfactory that Canada should lose the advantages due to having her increasing commerce passing wholly through her own ports. This can only be guaranteed, if at all, by making those ports much safer than they are present.

To another menace of President Grant in the same message—that of "suspending the operation of any laws whereby the vessels of the Dominion are permitted to enter the waters of the United States"—little importance need be attached, although, of course, it would be more satisfactory if all Canadian vessels made use of Canadian ports alone.

Railway Commerce.

Its internal commerce is almost always the mainstay of a nation. In value and in volume it is generally much greater than the external commerce. In the case of the United States the internal commerce is many times greater than the intercourse with foreign countries. Canada has not, however, become so independent of outside sources of supply as her neighbour. This is not because she has not the resources, but because those resources have hitherto been undeveloped.

The measure of this commerce in the case of both countries is the volume of goods carried by rail. In the case of the United States, that volume exceeds 1,000 millon tons a year. In Canada, the railways carried in 1902, only 42½ million tons of traffic, which is less than a seventh part of the volume carried on the railways of Great Britain. These 42½ million tons embraced about 7 million tons of grain and flour, nearly 5¼ million tons of lumber, more than 1½ million tons of firewood, nearly 6¼ million tons of manufactured goods, over 900,000 tons of live stock, and 21¼ million tons of coal, iron ore and other minerals, and miscellaneous traffic. The Grand Trunk system carried nearly one-fourth of the total volume of traffic moved by rail, and fully 1¼ million tons more than the volume carried by the Canadian Pacific Railway. It should be remarked that while the present volume of Canadian rail traffic is relatively small when set against that of American and British railways, it is more than eight times that of twenty-five years ago.

External Commerce.

So far as her general commerce is concerned, Canada is unquestionably making much progress. Her imports increased more than 100 per cent. between 1886 and 1902, while her exports have more than doubled in the twelve years ended 1902. In this latter period her exports of mining products have increased six-fold, her exports of fishing products have nearly doubled, her exports of agricultural products have more than doubled, and her exports of manufactures have increased by 84 per cent. Few countries have made a better record within so short a time.

Of the total imports into Canada in 1902, 62·1 per cent. were dutiable, against 71 per cent. of the total of 1890 and 81 per cent. f the total of 1880. Of the duties collected on imports in 1902, Great Britain paid an average of 25·9 per cent. and the United States an average of 46·7 per cent., so that the difference between the two countries was 20·8 per cent. against the United States. Going back only ten years the figures show that in 1893 Great Britain paid an average of 44·8 per cent. and the United States an average of 36 per cent. on their contributions to Canadian imports. Nevertheless, the percentage of the total Canadian imports received from Great Britain has steadily decreased, until 1899, at any rate, and the recovery since then has been too trifling to be worth naming. In 1880, 48 per cent. of the total value of Canadian imports was contributed by Great Britain and in 1902 only 24·2 per cent. stood to her credit.

Competition in Canadian Markets.

The Canadians are naturally watching with almost absorbing interest, the competition for their markets on the part of the United Kingdom and the United States, and not least so in respect of iron and steel, which is the group of their imports that represents the greatest aggregate value. Many tables in their statistical year-book are devoted to the elucidation of this subject. Those figures show that

the Canadian imports of iron and steel were not so large in the period 1894–98 as in the two preceding quinquennial periods, but, on the other hand, the imports for the year 1901 were more than 28¼ millions, and those for the year 1902 were valued at over 34¾ millions. The last-named sum is thus made up—in dollars—

	Dutiable.	Free.
Iron and Steel Imports from British Empire	4,756,342	1,646,851
,, United States	19,315,799	7,254,610

The total for the British Empire was 6,403,193 dollars, and for the United States 26,570,409 dols.

Mineral Development.

It may be that the iron trade of the Dominion is more tenacious of life than any other industry. It should have collapsed long ago if it had not been greatly coddled. Its history, as we have seen, has been a record of notable failures. And yet we find the *Economist* asking whether Mr. Chamberlain supposes that "we could be induced to sacrifice iron and steel when we have been protecting that industry with high duties since 1888, and paying bounties to boot? . . . It is a reasonable computation that in bounties and in loss entailed by duties—*i.e.*, enhanced cost of goods, this industry has cost the Canadian people 15,000,000 dols., while at least as much more has been spent by private investors in plants, successful and unsuccessful, to say nothing of the money lost by the speculative public in the recent collapse of the 'boom' in iron and steel stocks."

The remarks here applied to the iron and steel industries of Canada apply, *mutatis mutandis*, to many others. The really successful industries of the Dominion up to the present time are few; they may be counted on the fingers of one hand—apart from agriculture. The iron industry has probably been the most ill-starred of the lot, and yet it has been in existence for considerably over a hundred years. It is but fair to add that it has not until lately been founded on anything like modern conditions. Some of the members of that industry have been the most persistent advocates of high tariff duties and bounties, and their advocacy, as we have seen, has not been without influence. The fact is that the Government has generally the support of the municipalities in any reasonable legislation that will attract and employ population, and large industries produce that result more surely than any other means.

In respect of other minerals the recent progress of Canada has been greatly more rapid than it formerly was. The output of copper, for instance, has advanced in the last seven years—between 1896 and 1902—from 9¼ to 39¼ million lb., and the value of the gold production has increased in the same period from 2¾ millions to a maximum (in 1900) of 27·9 million dols. In the same period the output of nickel in matte has advanced from 3·3 million to 10·6 million lb., and the production of silver ore has increased from 1·5 to 2·0 million dols. Of asbestos the output in 1902 was about twice that of 1895, and of gypsum the increased output in the last six years has also increased by over 70 per cent.

CHAPTER XXXII.

Some Industrial Conditions.

Extent of Manufacturing Industry.

The conditions under which agricultural operations, the manufacture of iron and steel, the mining and industrial application of nickel, general mining industry, and forestry and fisheries, are severally carried on have formed the subjects of separate chapters in the present work. It remains to consider the subject of general industrial development. That subject, it need hardly be said, is a very large one ; so large, indeed, that it can only be dealt with in a superficial and perfunctory way in the space that is available here. A country with a population of about six millions must necessarily carry on a considerable general industry, unless it imports much the greater part of the products which it consumes. In the Dominion, it is claimed that about 40 per cent. of the people are maintained by manufacturing industry. This means, of course, a relatively large proportion of the six millions that now inhabit the Dominion. Iron and steel must form a considerable constituent of this important figure, but there are many other industries followed on a considerable scale, some of them founded on those metals, such as the manufacture of cutlery and hardware, locomotives, general engineering products, and sea- and lake-going vessels of various kinds.

There is no complete record of the extent of the manufactured products of the Dominion. There are, however, records of the exports of Canadian manufactures. These show that between 1871 and 1891, the progress of manufacturing industry, as measured by exports, was very slow — from about 2½ to rather over 6¼ millions of dollars. But in the next ten years the Canadian exports of manufactures rose from the last-named figure to 16 million dollars, and in the fiscal year 1903 to over 20½ million dollars. Thus the exports of manufactures since 1891 have increased considerably more than three-fold — by about 14½ million dollars, while in the previous twenty years the advance was only a little over 3¾ million dollars. By far the greater part of this trade was done with the Mother Country.

The character of the principal manufactured products of the Dominion next calls for consideration. A careful analysis of the particulars presented in the Canadian export returns shows that they embrace metal goods of many different descriptions, agricultural implements, bicycles, various forms of machinery, wooden and leather goods, cotton manufactures, boots and shoes, cordage, carriages, fur goods, drugs and dyes, etc. The staple product up to the present time is lumber and products of the timber industry.

In some cases manufacturing industries have been established almost wholesale, as, for example, at Sault Ste. Marie, where the Clergue enterprises embrace not only the manufacture of iron and steel, but also saw-mills, pulp-mills, chemical works, car shops, and foundries.* In the neighbourhood of several of the principal water-powers hitherto utilised, including Shawinigan and Montmorency, in the Province of Quebec, numerous factories of importance have also been erected.

In general manufacturing industry Canada is declared to be handicapped by American competition. This circumstance appears to require explanation. A recent report declares that the Americans do not capture Canadian business on the merits of quality or prices, but because "in most lines Canadian manufacturers have still all they can do. If Americans are capturing a lot of business, it is not altogether because they are underbidding Canadians, but partly because the latter cannot supply the goods. This is especially the case in regard to stoves. Though Canada has a largely increased capacity for producing stoves—new foundries having been started and old ones extended within the last few years—the demand exceeds the home supply. . . . So pressed have some Canadian stove manufacturers been of late that they have turned over a large number of their orders to American manufacturers making stoves of the same name and pattern. But Americans have been active in the West. Of stoves they are known to have shipped in sixty carloads" (within a month or two) "from Detroit, St. Louis, Chicago, Milwaukee, and other Western cities. While the home manufacturers cannot fairly feel aggrieved over the loss of trade that it is out of their power to do, they have a natural reluctance to allow the Americans to get such a grasp on the market, for, once in the field, they will be likely to remain there."

Again, her mining industries supply the Dominion with a considerable amount of manufacturing industry. One of the most important cases of the kind is that of the Canadian nickel business. The Sudbury mines are the backbone of Ontario's mining industry, the ore is now roasted, smelted, and re-smelted to a rich matte, and the only part of the refining process performed abroad is the final act of separating the nickel and the copper from the impurities in the matte—a step not involving much labour or expenditure of money. The smelting of copper ores is carried on at quite a number of plants scattered up and down the Dominion, especially in the Province of British Columbia, and the other indigenous ores that have to be similarly dealt with include zinc, platinum, molybdenite, asbestos, pyrites, chrome, mica, phosphates, grindstones, and building materials. There are many other directions in which the mining industries of the Dominion help the manufacturers, and in which their interdependence is marked and increasing.

The Textile Industries.

At a recent date 13,429 hands were employed in the various cotton factories, and the amount invested in plant was £4,800,000. Between Halifax and Hamilton there are some twenty mills, each of which employs on

* Details of these enterprises are recorded in a previous Chapter.

an average 500 hands, and represents an investment of £200,000. The town of Valleyfield may be said to be entirely dependent upon the company whose works are situate there; £800,000 is invested in one plant, furnishing labour for 3,000 hands. A section of the population, numbering about 12,000 souls, is wholly supported by the company. Canada exports a small quantity of cotton goods to the United Kingdom.

The woollen industry of Canada is one of relatively large dimensions, but it has not, so far, been very successful, and very little wool is exported; on the contrary, a good deal has to be imported to meet the needs of the country.

Flax.

Flax is grown in Canada mainly for the seed, but samples of flax in the beet may be found in Ontario that would, under proper treatment, as in Ireland, be suitable for the supply of the Belfast spinning mills. The fibre is, perhaps, hardly fine enough, but by the proper selection of seed, and cultivation of soil, sowing of seed, etc., there may by and by be fine fibre flax raised in Ontario, where there are large tracts of low-lying lands suitable for flax-growing. Twenty stone to the bushel of seed, and two bushels to the acre, at 10s. per stone, are not unknown in Armagh, where also flax has been sold as high as 15s. per stone. There are thousands of acres around Lake Simcoe which, if underdrained and kept free of surface water, would, it is believed, grow most excellent flax and give a big yield.

General Engineering.

The principal engineering industries of the Dominion are the manufacture of agricultural implements, of locomotives, and of wood-working machinery; but almost every town of any size has its repair shops, and there are several important engineering plants now on the way, among which the new works of the Westinghouse Company at Hamilton are among the most important, the capital of this enterprise being not less than 2½ million dollars (£500,000). The most important engineering plant now being built is, however, that of the Canadian Pacific Railway. A recent addition of 20,000,000 dollars was made to the capital stock of the Canadian Pacific Railway Company for the providing of additional locomotives, rolling-stock, improvements to roadbed, etc., including the construction of new car shops in Montreal, with a capacity estimated at from 20,000 to 25,000 cars, and from 100 to 150 locomotives per annum, and affording employment to 7,000 workmen. This enterprise is now being proceeded with. The Deering Agricultural Implement Works, recently established at Hamilton, is another new engineering plant of vast dimensions. Thirty-eight acres are being utilised, and there are twenty-three different buildings, of which the floor space is about 1,136,736 square feet. It is calculated that over 7,000 people will be employed.

The healthy and progressive spirit of the Far West is typically represented in the recent development of the mechanical engineering industry of the Province of British Columbia. The works owned by the Vancouver Engineering Works, Limited, an English company

comprising a limited number of English shareholders, with the exception of its local Canadian officers, exemplifies in a marked degree the success which may attend the combination of sound and conservative principles of management, with the most open-minded and intelligent adaptation of recent mechanical and inventive skill.

The engineering industry is the inseparable handmaid of every other branch of progressive manufactures. The large fleet of ocean and coasting steamers, the logging camps, saw-mills, fish canneries, placer mining camps, and the great quartz mines of the coast and interior of British Columbia are all largely dependent upon steam, and all, under modern conditions, upon mechanical skill for their operation; and in spite of what British workmen would consider a high wage scale, and the considerable distance from supplies of raw material, a very material part of the machinery required can be manufactured successfully on the spot, while, owing to the peculiar local character of some of the problems which have to be dealt with, a certain part must of necessity be manufactured locally. In addition to this there is the constant demand for marine and general repair work.

In the works above mentioned we find this concentration of variety of output within the circumscribed limits of an establishment employing not over 130 hands carried out in so admirable a manner as to call for some statement of the conditions, which are typical of those of other similarly new and remote communities.

The general control and administration of these works is placed by the English Board of Directors in the hands of Mr. Colin F. Jackson, a member of the mercantile house of C. F. Jackson & Co., Limited, and an Englishman who has adopted British Columbia as his home, while the technical management of the works, under Mr. Jackson's direction, is in the hands of Mr. George A. Walkem, a graduate of McGill University, Canada, trained in the workshops of Ontario and the Eastern American States.

The works are situated on the waterfront of Vancouver's beautiful harbour, having the main line of the Trans-Continental Railway running along their southern boundary, with a siding running right through the end of the machine shop, bringing the 40-ton cars under the overhead crane.

This machine shop is a well-lighted steel structure, manufactured by the American Bridge Company, equipped with overhead travelling cranes, made by the Whiting Foundry Company, of Harvey, Illinois. In it I saw wonderful logging engines, used for hauling the logs through the forests to the water's edge, in various stages of manufacture. The largest of these engines, one of which had just been completed at the time of my visit, has a 10 in. cylinder by 15 ft. stroke, carrying a boiler 131 in. long by 60 in. diameter, built of $\frac{7}{16}$ in. plate. The two drums are of sufficient size to take one and one-half miles of $\frac{7}{8}$ in. wire cable, to cover the long distances over which the logs have to be pulled. These engines, and smaller ones fitted with every device for the combination of lightness and strength, are used in nearly every logging camp in the country—to the displacement of the horses and bullocks formerly employed.

Among other articles seen in course of manufacture were the great water-gates for the dam now in course of construction at Lake Beautiful—from which Vancouver is in the near future to receive her supply of electrical energy*—and a set of Cornish pumps for one of the deep hydraulic mines of the Cariboo country.

The tools at work included an open-sided planer, a 6 in. universal drill, and a 54 in. engine lathe from the American Tool Works Company, of Cincinatti, Ohio ; a universal milling machine with all attachments ; a double-headed Acme bolt cutter ; a Bignall & Keeler No. 3 Peerless pipe machine ; and a 42 in. Bullard boring mill with stationary and turret heads, besides numerous small lathes of the latest American manufacture.

Another object of interest was a new foundry equipped with Whiting cupolas of three and six tons capacity each, the blast being driven by a 30 horse-power Canadian General Electric motor, which also operates the elevator and the various tools for cleaning castings. Large core ovens and brass furnaces are also installed.

The large pattern shop with its buzz planer, hand jointer and double-ended lathe, band saws with tilting table, Fox wood-trimmers and other novel and ingenious contrivances, brings this well-equipped establishment up to the best and latest practice.

The pipe shop proper, where the large pipes for hydraulic mining are worked up and riveted, under hydraulic pressure, from the imported Scotch sheets, into pipe from 6 in. to 60 in. in diameter, also claimed attention, while a special installation of tools, including all the most recent pneumatic contrivances, was working on a large contract for 5,000 ft. of pipe from 42 in. to 48 in. in diameter, made from plate as heavy as $\frac{1}{2}\frac{9}{2}$ in. in some instances. The business done by the Vancouver Engineering Works, Limited, in the first half of 1903, showed a return which is to be followed by the enlargement of its operations on a much more extended scale.

The Paper Industry.

The Canadian paper industry has shown marked progress during the last few years. It has been stated that in a short time the paper mills of Canada will be able to produce about 1,300,000 lbs. of paper every 24 hours. This total will include not only news print, book, paper, and ledger, bond and writing paper, but the coarser grades of product as well, such as wrapping, felt, building and manilla papers.

During the three-quarters of a century that have elapsed since the birth of the paper-making industry in Canada, mills have sprung up in various sections of the country, and there are at the present time about forty in operation, principally in Ontario and Quebec. The quality of their product has of late years exhibited a notable improvement. Until lately Canadian mills made no attempt to capture the paper market ; but now, through the energy and perseverance of the manufacturers, excellent paper is turned out, which can well hold its own with the imported article. Notwithstanding this, paper imports

* See Chapter on Water-Powers, page 183.

into Canada increase. In 1898 a value of 1,135,904 dols. was imported; in 1902, 1,945,786 dols.—the great bulk comprising papeteries, pads, printing and wall papers.

Petroleum Industries.

The production of petroleum in Canada is practically confined at present to the counties of Lambton, Kent, and Bothwell, in the south-western part of the Province of Ontario. Mr. John L. Bittinger, the United States Consul at Montreal, states that the town of Petrolia, in Lambton County, is the centre of the principal district of production, while the work of refining is carried on in Sarnia, about 14 miles distant, the crude oil being pumped through pipes to the refineries. In this Ontario oil district there are about 9,000 oil wells in operation, and the average monthly yield is nearly 60,000 barrels. The ratio of crude petroleum to refined oil is about 100 to 40, so that more than two barrels of petroleum are required to make one barrel of refined oil. The process of manufacture is complicated, and an expensive plant is required. The oil is in every case found in the Corniferous limestone, and the different producing areas present local dome structures on the main anticlines, which afford good reservoirs for the accumulation of oil. The oil is pumped from an average depth of 465 ft. Canada produces annually 11 to 12 million gallons of illuminating oil. Canada, however, still imports oils to the value of £250,000 to £300,000 a year, including illuminating oils, animal oils, and vegetable oils. The larger portion of the total importation is made up of coal and kerosene oils, several grades used in Canada coming from the United States. The importations of linseed oil are large.

Natural Gas.

Canada has not equal claims as yet to the possession in important qantities of the two mineral products that have done so much for the United States—petroleum and natural gas, but it is at present impossible to say to what extent these may be developed in the future. at a place called Medicine Hat, between Winnipeg and the Rockies, I went with some of my friends to examine an installation of plant designed to utilise natural gas supplies found there, and I was informed that not only did the supply suffice to light the whole town—not a large one—but it was also applied to power purposes on a small scale. I find from the official mineral returns that the value of the natural gas produced in Canada in 1902 is returned at only 196,000 dols., which is a drop in the bucket compared with the value of the supply utilised by the United States. For the same year the value of the supply of petroleum in Canada is returned at less than a million dols.

While I was at Medicine Hat a meeting of the Town Council was called to decide upon what steps would be considered necessary in connection with the gas well which had just been completed to a depth of 700 ft. The well is cased with 6-in. pipe to a depth of 624 ft., and a flow of gas was struck at 635 ft., but the flow was not strong, and below where the gas was struck the formation had caved in several

times. It was decided to drill to a depth of 1,000 ft. or more, using 5⅝-in. casing, in order to ascertain whether or not there is a greater body of gas at a lower level.

A Projected New Industry.

When I was in Vancouver, I was informed of a project then being promoted to utilise the stumps of the trees that had been burned down through the forest fires of earlier years. My information is that a business has been successfully carried on in the United States for some years in producing from such stumps certain chemical products, including odourless turpentine, of which, at present, that country claims to manufacture nearly three-fourths of the world's supply. My informant had no doubt that a large business would soon be done in this direction, having regard to the information he had acquired as to the costs and the profits of the pioneer enterprise in the United States.

Cheap Power.

The importance to an industrial nation of cheap power needs not to be dwelt upon. The great manufacturing nations make use of millions of horse-power annually. We have seen that in some cases this energy costs as much as £20 per h.p. per annum, and that in others it is offered at £3 per h.p. per annum. The community that has the cheapest power for its manufactures, lighting, etc., *cæteris paribus*, must eventually win the race. Canada is certainly in the running from this point of view. Already it offers an *embarras* of locations for industrial purposes. When she has more fully developed her water-powers the choice will be still more ample. The present situation is pithily put in a paragraph contained in the last annual report (October, 1903) of the Victoria (British Columbia) Board of Trade, which states: "Everywhere cheap water-power is available, and all that is wanted is a pipe line and a Pelton wheel." This opens up a vista of possibilities in the manufacture of power-plants which is not uninviting to the home manufacturer.

The aggregate available water-power of the Dominion is believed to be more than equal to that owned by the United States, although as yet undeveloped. I find, on consulting the United States Census reports for 1900, that the following were the powers made use of at different dates throughout the country as a whole, expressed in horse-power:—

Period.	Increase in h.p.	Increase per cent.
1870 to 1880	94,948	8·4 per cent.
1880 to 1890	37,964	3·1 per cent.
1890 to 1900	463,915	36·7 per cent.

The total amount of water-power used in the manufacturing establishments of the United States in 1900 was equal to 1,727,258 h.p., and constituted 15·3 per cent. of the total power employed. But these figures are liable to mislead, inasmuch as many electric motors driven by current developed by water-power are expressed as electric power by those making returns.

The work done in carrying the power from Shawinigan to Montreal has placed the latter city in the position of claiming to be the greatest centre of transmitted power on the American continent. It would be of interest to technical readers to have particulars of the installations that have enabled this claim to be made, but the present is not the time or place for such a description.* We need only here add that the arrangements made have enabled the cost of electric lighting in Montreal to be reduced to 15 cents (7½d.) per k.w.-hour, the working of the street railways to compare very favourably with those worked by steam-power whether here or elsewhere, and electric energy to be supplied at a low cost for many industrial requirements.

* Those who are interested will find a full account of the chief installations in the *Electrical World and Engineer* (New York) of December, 1903.

CHAPTER XXXIII.

Canadian Commerce with the Mother Country.

No question that pertains to the past, the present, or the future of Canada, has lately occupied so much attention on the part of the people of that country, of the people of the United Kingdom, and of the people of the world at large, as that of the trade relations between the Dominion and the Mother Country. This relationship has been the *fons et origo* of the present fiscal controversy in the British Isles. It has occupied the attention of European Cabinets for months past, and it is exciting in the United States an amount of interest that has never been eclipsed, if it has ever been equalled, by any controversy not of a strictly domestic and national character.

It was primarily Canadian trade relationships that led Mr. Chamberlain to propound his new principles of fiscal policy which have set the United Kingdom, and many other countries, by the ears for nearly a year past, and it was mainly in consequence of the enunciation of those principles by the late Colonial Secretary that I found myself, with more than five hundred other delegates from all parts of the Empire, at the great Imperial Congress of Chambers of Commerce, which was held at Montreal in August of 1903.

Although it appeared as though only one issue of general moment were submitted to the Congress—namely, that of whether steps should be taken to bring the Mother Country and the Dominion into a closer and more mutually reciprocal trade relationship—yet the issues involved were really much more numerous. They included the question of how far steps should be taken to give a preference to the Dominion in the supply of the Mother Country with foodstuffs; that of whether the Dominion was prepared to make corresponding concessions to the Mother Country in the event of such a preference being accorded; that of whether a Zollverein arrangement was practicable; that of whether Canadian manufacturers were prepared to waive their own interests in order that the agricultural interests might be benefited; that of whether the Mother Country was prepared to take a more direct and considerable interest—financial and otherwise—in the advance of the Dominion generally; and that of whether it was desirable in the interests of Canada, to abandon all idea of a reciprocity treaty with the United States.

Canada has for many years past been placed between the Scylla of American (United States) domination and the Charybdis of British neglect. The time has come, in the opinion of the leading Canadians, when it is necessary to make some sort of choice, leading to clearer

definition of the fealty of the Dominion on the lines of its material interests.

The Dominion is profoundly impressed with the conviction that the Mother Country has treated her child with an indifference which is hard to bear. This view was put forward recently by Mr. Ross, the Premier of Ontario, in the following terms* :—

"We have been allied with Great Britain for a great many years. Britain has known of our existence ; she has sent wise men to govern us ; she has helped to make laws for us ; she regards Canada, or has, for many years, as a very important colony. We think we are scions of the old Anglo-Saxon stock, and yet somehow or other we have got but comparatively a small foothold in the markets of Great Britain. Out of six hundred and forty-six million pounds of bacon consumed in Great Britain, we only send forty-three million pounds, a trifle and a small percentage of what they consume. Out of four hundred and fourteen million pounds of butter consumed in Great Britain, we only send twenty-four million pounds, and Denmark sends something like seventy-four million pounds ; and out of all her consumption of flour the United States send ten million barrels, whereas we only send about a million barrels. Somehow or other, the United States have got into the Imperial market on a much larger scale than we have. I mention that for two reasons—first of all, that we might feel there is a market for us somewhere ; and, next, that there is a market for us among the members of our own family. By no power that we possess as an agricultural people can we overfeed the people with bacon, or with ham, or mutton, or pork, or butter, or with tea."

At the present time the exports of the Dominion to the Mother Country are about two and a half times the value of the imports from Great Britain. It is natural that the people at home should desire to alter this condition of things. The case is even worse than the figures represent, for it will be noted that the imports are necessarily taken c.i.f., while the exports are f.o.b., and this would, perhaps, mean a deduction of 10 per cent. to 20 per cent. from the value of the imports, before the two groups were on the same level.

This fact raises the complex question of the invisible balance of trade. In the trade relations of the United Kingdom and the United States, there has for a number of years past been a balance of 400 to 600 million dollars a year in favour of the latter country. That balance, economists now agree, is made up of some half a dozen invisible elements, of which the interest on American investments, ocean freights, the expenditure of tourists visiting Europe, expatriation, the balance of rent, and the money sent to Europe by residents in the United States, are the principal items. It has been computed that these items collectively make up an annual sum of 300 million dollars, or about four dollars per head of the population.

In the case of Canada, the conditions, although not quite the same, are sufficiently near thereto to enable this invisible balance to be explained. Most of the exports from Canada are carried in ships on the home (United Kingdom) register, and if we assume only

* Speech delivered at the Annual Congress of Canadian Manufacturers in 1903.

10 per cent. of the value of the exports as charged to freights, we have at once a sum of about 12 millions of dollars. Then there are, of course, large British investments in Canada, on which interest has to be remitted, large expenditure in the Mother Country by Canadians going to and fro, a considerable and increasing balance in respect of expatriation, and large sums remitted to Europe by the residents in Canada.

Of the total imports of Canada in 1902, the British Empire contributed 54 million dollars, and the rest of the world 158¼ million dollars. The latter item included goods valued at 129¾ millions of dollars furnished by the United States, which is 140 per cent. over that furnished by the whole of the British Empire. On the other hand, the exports of Canada in the same year included produce of the value of 129 million dollars supplied to the British Empire, and produce of the value of 82½ million dollars supplied to other countries, in which latter figure, the United States stands for 71¼ millions. Of the total external trade of Canada in 1902, amounting to 424 million dollars, the British Empire figures for 183 million dollars, and foreign nations for 241 millions.

The present situation, therefore, is that 43 per cent. of the total external trade of Canada is done with the rest of the British Empire, and 47.2 with the United States. It is interesting to note that Canadian exports to the rest of the British Empire are just about the same figures of value as Canadian imports from the United States—being 129.0 million dollars in the former case, and 129.7 millions in the latter. Germany does not cut much of a figure in Canadian trade returns, the total volume of such trade, including both imports and exports, having been only 13.6 million dollars in 1902.

The total Canadian imports for consumption in the fiscal year 1901-2 were valued at 203,000,000 dollars, composed as follows :—

	Dollars.
From Britain	49,000,000
From the United States	121,000,000
From Germany	11,000,000
From France	7,000,000
From all other countries	15,000,000
Total	203,000,000

Canada thus imported 154,000,000 dollars worth of goods from countries other than Britain, and it is proposed to give the latter an opportunity of securing that trade as a *quid pro quo* for her favoured treatment of Canadian products. Of the Canadian imports from the United States, about one-half (61,000,000 dollars' worth) consist of non-dutiable articles, like anthracite, miscellaneous farm products, horses and cattle, Indian corn, binder twine, flax and hemp, raw cotton, raw tobacco, hides, ores, woods, such as oak and hickory, mining machinery, settlers' effects, fish, coin and bullion, etc., which, from the nature of things, Britain could not supply, no matter how large a preference she might enjoy. The 60,000,000' dollars worth of dutiable goods that came from the States included petroleum, railway cars,

farm implements, wagons and sleighs, flour and other breadstuffs, printing paper and presses, watches, electrical apparatus, etc., which Britain could not furnish at all, or only at a disadvantage. The remainder were articles the like of which are already manufactured in Canada, or soon will be, as, for instance, in the latter category, steel rails. The imports from Germany, France, and all other countries, amounting in value to 13,000,000 dollars, were composed of sugar, tropical fruits, fancy goods, perfumery, wines, certain metals, and chemicals, etc., which could not be furnished by Britain save in rare instances.

This analysis of the import trade of Canada goes far to explain the difficulty that attends any attempt to galvanise into greater activity a large part of the trade which Britain now fails to do with the Dominion. Indeed, there are only a few items that could be transferred from the United States to the United Kingdom without violating the natural operation of economic laws. Needless to say, one of these items, and perhaps the most obvious and important of them all, is that of iron and steel.

The absolute and the relative importance of the leading branches of Canadian imports are indicated by the following figures :—

Value of Total Canadian Imports of Various Commodities in 1902 (1 = 1,000 *dols.*).

	From Great Britain	From United States.
Iron and Steel	4,748	17,814
Cottons	5,076	1,582
Leather	261	1,468
Paper...	361	1,472
Woollens	8,860	354

These figures make it clear that the imports of iron and steel into the Dominion are in value about 145 per cent. greater than those of the next largest staple, which is woollen goods. This fact is a sufficient proof of the over-mastering importance of iron and steel in Canadian trade. But while the importance of the iron trade is thus recognised, the fact that the British contribution to the supply of Canada is only about 20 per cent. of the total imports from the two chief sources of supply is a situation that can hardly be otherwise than grievously disappointing. The total value of iron and steel goods supplied by the United States to Canada in 1902 is equal to an eighth part of the total British exports of iron and steel to all countries in the same year.

There is no market in the world that promises to develop more rapidly in the near future than that of the Dominion. Her population to-day is nearly a million tons greater than that of the United States in the opening year of the nineteenth century. Between that year and 1850, the population of the United States advanced from 5,308,000 to 23,191,000. Now that Canada has started on a career of abounding prosperity, in the face of a general recognition of her splendid resources of every kind, there is sound reason to believe that her growth in population will be as rapid as that of the United States has been. It is

permissible to expect that it may be even more so. The factors that make for increase of population and of wealth are more potent in Canada to-day than they have ever been in the United States in their earlier career. Those factors are primarily industrial needs, agricultural resources and demands, facilities of transportation by land and sea, and an increasing pressure on the means of subsistence in other lands.

It is not in iron and steel alone that Great Britain has of late years been greatly beaten by the United States in Canadian markets. The same movement has been noted in Canadian imports of machinery, although machinery is, and has for generations been, one of the strongest elements of British commerce. To the Canadian imports of machinery of all kinds in 1903 the United Kingdom only contributed a trifle over 3 per cent., practically the whole of the remainder having been furnished by the United States. One may naturally ask why, if Britain is so successful in supplying other countries with their mechanical equipment, she should so signally fail in Canada? The answer is the same as that given again and again in respect of other matters. Canada is supplied by the United States because the one country almost slavishly follows or imitates the other in all industrial matters, and mainly makes use of American machinery in its mines, factories, and workshops.

The exports of Canadian produce to the United Kingdom and the United States in each of the years 1897 and 1902 are shown in the following table, in thousands of dollars :—

	United Kingdom.		United States.	
Products of—	1897.	1902.	1897.	1902.
Mines ...	354	803	10,532	33,140
Fisheries ...	4,366	6,374	2,998	4,184
Forests ...	2,349	1,912	3,646	2,502
Animals, etc.	33,600	52,687	5,081	5,139
Agriculture...	13,507	27,973	2,419	2,555

The preponderance of the United States over Great Britain appears in the cases of mines and forests alone. In agricultural products the British demands are infinitely superior. The United States import a very considerable annual value of Canadian coal and of gold-bearing quartz, etc. The total value of such imports in 1901, when the maximum was reached, was 4,418,503 dollars for coal, and 24,232,000 dollars for gold-bearing quartz, etc. The corresponding imports by Great Britain are very trifling.

The Canadians supply the Mother Country with a considerable bulk of produce in the three categories of fresh mutton, live animals, and canned fish. Of fresh and salted pork, salted beef, preserved meat, poultry and game, and lard, they appear from our trade returns to supply practically none. The following table gives the broad facts of our imports for the principal categories of imported foods :—

Summary of Food Imports into the United Kingdom in 1902.

	Colonial.	Foreign.	Total.
	Cwt.	Cwt.	Cwt.
Breadstuffs ...	28,879,665	103,289 969	132,169,634
Flour	1,943,214	17,534,985	19,478,199
Meat (excluding bacon and ham)	£ 7.724,751	£ 30,805,834	£ 38,530,585
Dairy produce ...	7,173,858	28,635,883	35,809,741

A glance at these figures makes it all too clear that the Colonies have a long race to run before they can claim to be in the handicap with the United States, on whom we now chiefly depend for our imported food supplies.

The imports of Great Britain from the Dominion have been growing rapidly of late years, and promise to do so much more rapidly in the future. Until 1870 the value of the exports of agricultural produce from Canada to the United States was larger than the corresponding exports to Great Britain. But from that date a considerable and rapid change took place, and Great Britain thenceforth took the lion's share of the exports of the Dominion, although even in 1890 the British imports were only about 60 per cent. above those of the Republic. In the following twelve years British imports largely increased and American imports decreased, until in 1902 the British were about eleven and a half times those of the United States. The total value of the Canadian agricultural exports to Great Britain in 1902 was officially returned at 79½ million dollars, or 84 per cent. of the total to all countries.

The great increase in the trade between the Dominion and the Republic and the coincident decrease in the trade with the Mother Country is a comparatively new thing. The amount of Customs duties collected by the Dominion on imports of American produce was always less than that collected on British produce until 1896, when, for the first time, Great Britain took a second place. But in 1871 Great Britain contributed nearly three times as much as the United States, and in 1889 the British contribution was 43 per cent. greater. Between 1898 and 1902 the American exports to Canada increased to a greater extent than they had done in the whole previous history of American commerce. Britain's highest figures in the Canadian import trade were reached in the year 1882. In 1902 it was higher than it had been in any one of the eight previous years.

CHAPTER XXXIV.

Canadian Commerce with the United States.

General Conditions.

There are certain important aspects of the trade relations of the Dominion and the Republic, apart from those of reciprocity, and of comparative attainments in the essentials of progress—both of which are elsewhere referred to—that appear to call for notice in any consideration of the economic position of Canada.

There are very few aspects of Canadian life, and fewer still of Canadian business, in which the influence of the United States does not play a more or less dominating part. So far, indeed, does this domination go, that it is often the controlling factor. Americans and Canadians practically live together on a purely artificial boundary line, which does little to keep them apart except in so far as that can be done by Customs tariffs. Their railways run into and over each other's territories. This traffic is carried to a large extent in and out, without even the existence of Customs barriers being made apparent. Americans engage in every form of Canadian industry. They find a great part—often by far the greater part—of the capital required to develop Canadian enterprises from the one ocean to the other. They compete in every branch of industry. They interchange every class of labour. American trade unions have gone far in the direction of controlling Canadian labour. American rates of wages are paid in Canadian factories and workshops. American ports receive and distribute a great bulk of Canadian imports and exports. America and Canada divide the ownership of some of the greatest waterways on the surface of the globe, and in a few cases, as in that of Niagara and the St. Mary's River at the "Soo," they share the possession of some of the greatest sources of natural energy in existence. Hardly a single form of industry is carried on in Canada to-day in which America does not more or less successfully compete in Canadian markets. Over a large area of operations they interchange commodities. Canada supplies the United States with bituminous coal, and Pennsylvania supplies Canada with anthracite. Ontario provides some American iron works with iron ores, and Vancouver Island provides the raw material that feeds American works in Washington Territory.

A distinguished American writer has recently pointed out that while Canada can supply the increasing wants of the people of New England for coal, cord wood, fish, potatoes, hay, and the increasing wants of the Middle and Western States for timber, barley, ore, power

carried by electricity, and other useful products, on the other hand the people of New England can and do supply Canada with boots and shoes, early vegetables, textile fabrics, and metallic products ; while the Western farmers and manufacturers can and do supply many products of agriculture, agricultural implements, coal, mining machinery, and the like.* He proceeds to say that—"Under the so-called protective policy the United States taxes the goods which come in from Canada in some cases at almost prohibitory rates ; while the Canadians tax the products of the United States higher than those of Great Britain." The same vivid writer has further pointed out that the farmers and foresters of Canada can make certain products in greater abundance at such a low cost, or of such superior quality, that they are wanted by some one in the United States who can convert them to the use of the consumers of that country. On the other hand, because the farmers and manufacturers of the United States can make certain products at less cost or of better quality, the inhabitants of Canada desire to buy them. "Under the settled principle or rule of action of free trade they would exchange product for product to their mutual benefit. There is no natural barrier between these two countries. On a line of 3,000 miles one may paddle across a river or cross a lake, or drive over a bridge, taking over what each has to sell and bringing back what each wants to buy."†

No doubt if one looks at the map of North America they are likely to say that it is in violation of all the indications of nature that artificial barriers to trade and commerce should be erected upon an imaginary line stretching from the Atlantic to the Pacific, between peoples of common descent and common language, who are engaged in a common aim, namely, the making tributary to their material advancement of the vast resources of nature.

In spite of the restrictions placed upon the commerce between the two countries by the imposition of duties on both sides of the line, the balance of trade has, since the abrogation of the Reciprocity Treaty, been in favour of the United States to the extent of from two and a-half millions to seven million dollars annually ; and between 1850 and 1890, of a total aggregate of trade between the two countries of some two billions four hundred and forty millions of dollars, there has been a balance against Canada and in favour of the United States of over two hundred and five million dollars.

When I was in Ottawa I had a conversation with Mr. Johnston, the Government statistician, who had just completed a statement for the use of the Government as to the interchange of commodities between the Dominion and the United States, with a view to the ascertainment of what Canada was likely to gain, if anything, by reciprocity with that country. The result was hardly satisfactory to the reciprocity idea. The United States export very little to Canada that the Dominion cannot produce for itself. In all agricultural, mining, forest, and fishery commodities the resources of the Dominion are abundant. The United States excel in manufactures of machinery, etc., but this is just what

* *Reciprocity*, by E. Atkinson, p. 9.
† *Reciprocity*, p. 7.

the Canadians desire to produce for themselves. Indeed, the present exports of Canada across the line include manufactures of cotton goods, drugs, metals, agricultural machinery, timber (furniture), carriages, and cordage, as well as fish, fruit, meats, seeds, and whisky. The things that Canada does not produce for herself the United States cannot supply in any large measure.

The general attitude now assumed, in theory, at least, towards the United States by leading Canadians, may be gathered from the tenour of some remarks recently made (in 1903) by Mr. Ross, the Premier of Ontario, at a great gathering of Canadian manufacturers:—"Why," he said, "should Canada sit humbly at the feet of the United States, or of any other country? Why should we wait for orders from anybody? Our marching orders are to take possession of this full land from forty-nine to the North Pole. Our marching orders are to fill these prairies with millions of people and to send a shower of gold, or as a shower of manna to the markets of the world, the produce of these mighty prairies which are our heritage. Our marching orders are to make our own iron and steel from the ore which nature has planted in those Laurentian Hills which fortify us upon the north and south. Our marching orders are to make a passage for the fleets of the world through our inland seas and our great rivers, that they may bring the treasures of commerce to the markets of the East. And if we are faint-hearted and feeble-minded, the generations yet to come will scorn the names of their fathers, and will say we have been untrue to the obligations which Providence imposed upon us."

In a speech which he delivered in Toronto in December, 1903, Sir Richard Cartwright, the Canadian Minister of Railways, referring to complaints made about the balance of trade with the United States—which supplies Canada with 80 per cent. more than the value of the goods received from the Dominion—said:—"Those who made the complaints appear to think it is all right to sell to Great Britain twice as much as we buy from her, but it is all wrong to buy from the United States twice as much as we sell them. But of the . . . . great volume of free imports from the United States in 1903, the Canadian imports of cotton, wool, and waste for the benefit of manufacturers amounted to 6,250,000 dols.; anthracite coal and coke, to 8,000,000 dols.; coin and bullion, to 8,800,000 dols.; and settlers' effects to 8,280,000 dols. Added to these were the goods imported in transit *viâ* the States, and the enormous mass of goods imported to enable manufacturers to make up goods for home consumption. The United States did not make very much profit out of the goods we imported free of duty."

From all that I have been able to learn, I can only conclude that the Canadians have done all that they can to induce the Americans to invest their capital in the country, and no doubt with a large measure of success. Mr. Colin F. Jackson, of Vancouver, gave me some particulars throwing light on one such case, which is more or less typical. There had been a considerable business done in the export of logs and shingles from British Columbia to the United States. The logs were sent into Washington Territory at a very low cost, and there sawn into shapes for general American consumption. The Provincial (British Columbia) Government decided to prohibit the export of logs except on certain

conditions which rendered their export less easy, and the almost immediate result was that the Americans established shingle mills within the Dominion to carry on the business previously done in the United States.

Some Statistical Aspects.

Commerce between Canada and the United States shows a rapid gain both in the figures of the year 1903 and in those of the decennial period which ends with 1603. The commerce of the United States with Canada in 1903 aggregated nearly 200,000,000 dols., against less than 100,000,000 dols. in 1893. The increase occurs both in imports into the United States from Canada and in exports from the United States to Canada. The American imports from Canada, which in 1893 amounted to only 34,000,000 dols., in 1903 reached about 55,000,000 dols. United States exports to Canada, which in 1893 were 57,000,000 dols., in 1903 aggregated about 130,000,000 dols. American total commerce with Canada has thus grown from 91,000,0000 dols. in 1893 to approximately 185,000,000 dols. in 1903.

On the import side the increase in United States' purchases from Canada has been much more rapid proportionately than from other parts of the world. The total imports of the United States in 1893 were 776,000,000 dols., and in the calendar year 1903 were about 1,000,000,000 dols., an increase of about 30 per cent.; while the imports into the United States from Canada meantime showed an increase of about 60 per cent. The total exports from the United States, which in 1893 were 876,000,000 dols., in 1903 approximated 1,460,000,000 dols., an increase of 66 per cent., while in American exports to Canada the increase was about 125 per cent.

The statement has been made again and again during the recent discussions on the trade relations of the Dominion and the Mother Country that the preference of 33⅓ per cent. now conceded had greatly increased the trade between the two countries. This is true. But the increase has not been equal to that which has taken place in the same interval in the trade of the Dominion and the Republic, as the following figures show :—

Imports into Canada.

From	1892. Dols.	1902. Dols.	1903. Dols.
Great Britain	41,348,435	49,206,062	58,893,710
United States	53,137,572	120,814,750	137,605,195

Exports of Canadian Produce.

To	1892. Dols.	1902. Dols.	1903. Dols.
Great Britain	54,949,055	109,347,345	125,199,980
United States	34,972,517	66,567,784	67,766,362

The total value of exports of Canadian produce in 1903 having been 214,401,674 dols., it will be noted that Great Britain purchased 60 per cent. of the exports, the United States took 31 per cent., and the rest of the world only 9 per cent.

For some years now the Dominion and the Mother Country have been unceasingly exercised as to the increase of Canadian trade with the Republic. They have been diligently seeking for a solution of the

problem how to transfer to Canadian and British manufacturers the market held in Canada by United States manufacturers. If the latter be eliminated by a high tariff, then a preference may be given to Great Britain without costing Canadian manufacturers anything. In fact, they would expect to reap a large net benefit, while at the same time facilitating British trade. It has been suggested that if, by raising the tariff, 40,000,000 dols. were lopped off the annual export trade done in Canada by American manufacturers, that 40,000,000 dols. could be divided between Canadian and British manufacturers in the ratio, say, of three to two, the preference being so adjusted as to give 16,000,000 dols. of it to Britain, leaving the other 24,000,000 dols. to Canada.

As to the future, the following remarks by a distinguished American will probably be accepted as a correct record of the outlook :—" Large as is our commerce with the British Empire, it is but in its infancy, as the British Colonies must increase in population more rapidly than other parts of the world ; and they are essentially a trading people. For example, less than 4,000,000 of Australians have a foreign commerce almost double the foreign commerce of the 130,000,000 inhabiting the Russian Empire ; and Canada, with less than one-sixth the population of South America, buys from us more than twice as much each year as do the South Americans. It is therefore greatly to our interests that no preferential Customs arrangement should be made, as proposed by the Colonial Possessions of Great Britain."*

Conditions that make for Greater Trade with the United States.

A correspondent of the *Economist*, writing from Canada in June 1903, called attention to the following conditions as controlling the trade of the Dominion with the United States and the United Kingdom :—

1. That the actual tax under the preferential tariff is very considerably less than a mere statement of the average tax on *all* British imports would lead you to suppose.

2. That, whereas formerly the imports from Great Britain were rapidly diminishing, they are now rapidly increasing.

3. That, owing to their peculiar methods of trade, it is well established that the United States manufacturers do, as a matter of fact, sell their products in Canada at a greatly reduced price, as compared with that charged to their own customers at home, and that, also, as a simple matter of fact, their profits relatively are very much smaller than those of the British manufacturer on his sales.

4. That, measured *per capita*, Great Britain in any ordinary year sells about *seven* times as much to every inhabitant of Canada as she does to the inhabitants of the United States.

5. That, by reason of the extreme convenience of communication, and also from the fact that the conditions of life (more particularly in the Northern States) are almost identical with those which prevail in

* Statement of Hon. John R. Proctor, President of the United States Civil Service Commission, in the Forum in September, 1898.

Canada, it is very much easier for a merchant or manufacturer in the United States to supply the requisite quantity and quality of goods required in Canada than it is for his British competitors.

These are declared to be the causes which will always induce a larger trade between the people of the United States and the people of Canada than with Great Britain, and the writer thinks that the wonder rather is, even with the aid of the preferential tariff, that so large a proportion of British goods are consumed in Canada.

Sir R. Cartwright, the Canadian Minister of Trade, in a speech which he delivered in June, 1903, declared that geography made it much easier for Canada to trade with the United States than it would ever be to trade with any country on the other side of the Atlantic. He pointed out that in the greater part of United States, measured by population, it only takes twenty-four hours for a letter from any part of older Canada to reach its destination, and a telegraph or telephone message will reach it in an hour. "Moreover, the conditions of manufacture, the conditions of the life of the people in the United States, and particularly in the Northern States, are so closely analogous to those prevailing in Canada, that it is exceedingly easy for them to understand the needs of our market; whereas, in the Mother Country it is not by any manner of means so easy to communicate with us or to supply our wants, and consequently it is no wonder at all that our trade with the United States should increase more largely than our trade with Great Britain."

CHAPTER XXXV.

The Competition of the Ports for European Trade.

Probably no country in the world can claim to possess so wonderful a maritime system as that of Canada, except her neighbours, the United States. The maritime provinces of the Dominion have at least three of the finest harbours in the world—Sydney, Halifax, and St. John. The St. Lawrence is one of the half-dozen finest navigable rivers on the surface of the globe, and is navigable for more than 700 miles from its source, so that the commercial capital of the country, Montreal, is a port of no mean importance. On the other side of the Continent, there are several excellent shipping ports, including Victoria, Vancouver, New Westminster, and Port Simpson, all of them young, but capable of very large development. All this in addition to the numerous ports and harbours on or near the great lakes, such as Port Arthur, Fort William, Windsor, and others. In spite of all this, however, Canadian imports and exports depend largely upon American ports, and notably on Portland (Maine) and Boston.

Both in St. John and in Halifax I found a considerable feeling of resentment rankling in the minds of the people—partly because of the fact that a great part of the goods shipped to the Dominion are sent in bond through the ports of Portland (Maine) and Boston instead of through the maritime provinces, and partly because the Canadian mails for the maritime provinces, instead of being carried direct to Halifax or St. John, are carried first by Canadian vessels to Rimouski, and are thence carried back practically over the same ground to those cities, involving a delay of many hours, which is held to be unnecessary. The mails that now come *viâ* New York are delivered in Halifax within nine days, and are delivered in Montreal fifteen hours ahead of Rimouski. The Halifax people are all the more disturbed when they remark that both the Cunard and the Inman lines formerly called there. Halifax, indeed, is still spoken of as the "back door of the Dominion."

It is perhaps natural and justifiable that the ocean ports of Nova Scotia should view with considerable soreness the fact that 17 per cent. of the total import and export business of Canada comes through the ports of the United States—the total so handled having been over 70½ millions of dollars in 1902 (fiscal year to June 30th). The Canadian

Year Book for that year gives the following particulars of the value of Canadian imports and exports *vid* United States ports :—

	Dollars.
Imported into Canada from Mother Land and Sister Colonies through United States ports	13,415,052
From foreign countries	8,898,699
Total	22,313,751
Exported to Mother Land and Sister Colonies through United States ports	44,860,785
To foreign countries	3,332,065
Total	48,192,850

This large traffic in bond is sent through the United States because Portland and Boston offer better facilities for the distribution of imports throughout the most populous part of Canada—Toronto, Montreal, Ottawa, Hamilton, etc.—and because they are more convenient to the great lakes for exports of Canadian produce. At the same time, the maritime provinces have a good case for altering the system that diverts so large a part of Canadian trade from their ports.

No one who has not heard their rival claims and pretensions put forward by their leading men can form an adequate idea of the friendly jealousy that prevails between the three Eastern Canadian ports of St. John's (New Brunswick) and Halifax and Sydney (Nova Scotia). I found at all three ports that the burden of the story always was "Codlin's the friend ; not Short." One port urges that it is nearer to Europe as the crucial test of its superiority ; another that it is a natural harbour of refuge ; and another that it is accessible at all states of the tide and in the worst fogs.

HALIFAX.

When at Halifax, the Chamber of Commerce delegates were taken round the harbour by the municipal and other authorities, in order presumably, to be placed in a position to advocate its claims to be the Canadian terminus of the proposed fast Canadian Atlantic service. The people of Halifax have every reason to be proud of their port. Nature could do but little for them that has not already been done.

Halifax is one of the Atlantic termini of the I. C. R., and is one of the best deep water harbours anywhere. In the sailing directions published by order of the Commissioners of the Admiralty it is designated as "one of the finest and safest harbours in the world, affording space and depth of water for a large number of vessels." The entrance, five and a half miles wide, between Devil's Island and Chebucto Head, is thoroughly lighted and buoyed. The area is ten square miles, and in addition Bedford Basin, which may be called an inner harbour, possesses an expanse of equal extent. The harbour proper is about one mile and a quarter in width, and there is no obstruction except a couple of shoal patches to eighteen or twenty miles of deep water anchorage, several miles of which are alongside the business water front. The Admiralty soundings show an unbroken

series of markings from eight to twelve fathoms in depth, which is sufficient for any ordinary vessel of to-day.

The people of Halifax urge as one of the recommendations of their port that it has been pointed out by marine experts well qualified to judge that the great increase in the size of freight and passenger steamers involves the contingency of their inability to undertake inland navigation with a due regard to economy and efficiency, open all the year round, with facilities for loading and discharging rapidly at any hour of the day or night; that the fast Atlantic liner with Halifax as a point of departure would be out on the broad Atlantic, clear of all, an hour or an hour and a half after leaving the deep-water terminus, a phase of Transatlantic risk which marine underwriters will not be slow to recognise. They plead that ocean steamers run with almost the regularity of a ferry between New York and Liverpool, making the round trip in four weeks from port to port, including ample time to discharge and load, and that when steamers of this class run between Halifax and Liverpool, Plymouth or Southampton, the round voyage is capable of being reduced to twenty days. The future of the port of Halifax is declared to be largely bound up in the establishment of an ocean steamship service, scheduled to revolutionise old time methods, by making eighteen round trips in the year instead of the thirteen now being made.

Sydney.

Sydney claims to possess material advantages over either Halifax or St. John's as a winter port. The first is that of geographical location. The following figures show the distances of each of the three ports from Liverpool—in miles :—

Sydney.	*Halifax.*	*St. John's.*
2,282	2,450	2,700

These figures show a difference in favour of Sydney of 168 miles compared with St. John's, and a difference of 418 miles compared with Halifax. It is only proper to add that Sydney Harbour is one of the best in the Province. Sydney's geographical position is admirably suited for access to other maritime centres. It is 1,960 miles nearer to Panama, and 2,224 miles nearer to Jamaica, than Liverpool, and is, of course, proportionately nearer to those points than other European ports.

Average Advantage of Sydney over two leading American Iron Centres in European Markets, 1,779 Miles.

	Miles.
Sydney to Liverpool	2,282
Pittsburg to Liverpool	3,510
Birmingham (Alabama) to Liverpool	4,782
Sydney to Hamburg	2,725
Pittsburg to Hamburg	3,943
Birmingham to Hamburg	5,231
Sydney to Gibraltar	2,535
Pittsburg to Gibraltar	3,688
Birmingham to Gibraltar	4,804

The following is a list of some of the foreign markets in which the Sydneys lead in respect of distance :—

Sydney, C.B.	Pittsburg, Pa.	Birmingham, Ala.	Birmingham, G.B.	Westphalia, Ger.	Miles to
6,467	7,224	7,585	6,631	7,076	Cape Town
3,567	4,100	4,409	4,232	4,777	Pernambuco
6,680	7,213	7,522	7,345	7,790	Cape Horn
8,128	8,661	8,970	8,793	9,238	Valparaiso
12,879	13,412	13,731	13,544	13,989	San Francisco
13,710	14,243	14,552	14,375	14,820	Vancouver
11,090	11,623	11,932	11,755	12,200	New Zealand

The nearest first-class harbour to Europe is that of Sydney, C.B., comprising the ports of Sydney and North Sydney. Its arms are five and seven miles long respectively, and the average depth of water is fifty feet. At Sydney the coal piers of the Dominion Coal Company, are of the largest and most entirely modern type, fully equipped with machinery and chutes with a loading capacity of 20,000 tons per day. In addition to the facilities provided for rapid loading of large steamers, there is an auxiliary equipment of buckets which are worked by hydraulic towers, and are so placed that ships of any height or draught are loaded at any time of the tide. These piers have been so planned as to meet the requirements up to a capacity of 40,000 tons per day, whenever the output of the collieries may warrant the increase of force and the additional machinery. In fact, the International Piers are among the largest in the world, and, with one exception, the largest on the Atlantic seaboard. Steamers of 6,000 tons capacity have been loaded within twenty-four hours of docking.

North Sydney is 240 miles nearer Milford Haven than Halifax, which is the first available port on the other side of the Atlantic. North Sydney has other advantages in its favour. It is an important coal port. During the summer months there is less fog on the Cape Breton coast at that point than there is southward along the Nova Scotia coast and in the Bay of Fundy. Sydney people say that probably for every day North Sydney has fog, Halifax has it ten. "There are no outlying dangers, such as reefs or shoals. Insurance rates would be cheaper, for, having its route definitely marked to run 150 miles south of Cape Race in the track of New York steamers, the fast line would offer better risks to underwriters than the New York steamers themselves, on account of the fewer dangers to be met in a shorter voyage. And finally, North Sydney commends itself on account of its commercial position." The North Sydney people make much of the fact that the Halifax route would mean sending vessels up the St. Lawrence; and that if 25-knot steamers were provided for Canadian needs, to compete with New York, it would simply be defeating the design of the service to send them by that route, which they must navigate cautiously and slowly. Even with careful sailing a steamer 600 feet long and 30 feet draught could very easily come to grief where so many dangers lurk as in that river. They add that "nothing would be so discouraging to a fast line service as to have a 3,000,000 dols. steamer go ashore, and nothing would frighten the insurance underwriters so badly. Every practical man knows that the St. Lawrence route is not suitable for a fast line that will be a fast line

indeed. Moreover, that route would make it necessary for the steamers to run countless dangers in fog and among icebergs on the Banks of Newfoundland, while the North Sydney route would provide a course clear of both fog and 'bergs.'"

Halifax, of course, does not let so strong an indictment go unanswered, and so she retorts that in February, March, and April, North Sydney harbour is troubled with ice. It is, in short, a contest for supremacy between ice and fog, according to the admissions of the combatants themselves.

St. John.

The claim made by St. John to be the winter port of Canada is founded on the fact that while it is only 2,700 miles from Liverpool, New York is 3,034 miles, and Boston is 2,807 miles. It is true, they admit, that Halifax is 250 miles nearer to Liverpool than St. John, but then it has 356 miles longer railway haul to Montreal. St. John also claims, as against Portland, in Maine—which is 143 miles farther from Liverpool—that it has two competing lines of railway into the interior of Canada, against only one to Portland, while traffic shipped from Liverpool reaches the principal Canadian cities *via* St. John more quickly than traffic shipped at the same time *via* Portland.

After an examination of all three harbours, I may be permitted to express the opinion that Halifax, as a harbour, appears to be the most admirably suited to the wants of the service; but each of the other claimants has undoubtedly a case.

In view of the ultimate adoption of a Canadian fast Atlantic service, the Dominion Government are at present spending large sums of money in deepening the St. Lawrence River between Montreal and Quebec to a uniform depth of 30 feet, and widening the channel to 500 feet, which was expected to be completed for the opening of the season of 1904. They are also spending a considerable sum in improving the aids to navigation between Montreal and the sea. At a meeting of the representatives of the Dominion Cabinet and Lloyd's Committee of Underwriters a short time ago, the Minister of Finance stated that the Dominion Government would spend whatever sum was necessary to make the St. Lawrence a perfectly safe route. The commercial bodies in Canada consider that Lloyd's place a penalty on vessels going to British North American ports, which is quite unwarranted by the risks to navigation in these waters. Meanwhile, there is a strong sentiment in Canada that Canadian products should pass through Canadian channels to the Canadian seaboard, and should find a market in the British Isles upon British ships.

The following figures indicate the time that would be taken between the different termini, assuming that a speed of 23½ knots were maintained by such a steamship service as that referred to:—

	Days.	Hours.	Distance. Miles.
United Kingdom and Sydney, C.B., in	4	0	2,240
,, ,, ,, Quebec, in...	4	18	2,661
,, ,, ,, Montreal, in	5	0	2,833
,, ,, ,, New York, in	—	—	3,130

	Days.	Hours.	Distance. Miles.
United Kingdom *viâ* Sydney, or Montreal, or Quebec, thence by railway to Toronto, Ont., in	5	6	—
,, ,, ,, Sydney, or Montreal, or Quebec, thence by railway to Winnipeg, Man.	7	0	—
,, ,, ,, Sydney, or Montreal, or Quebec, thence by railway to Vancouver, B.C.	9	0	—
,, ,, ,, Sydney, or Montreal, or Quebec, thence by railway to Chicago, Ill., U.S.	9	0	—

Pacific Ports.

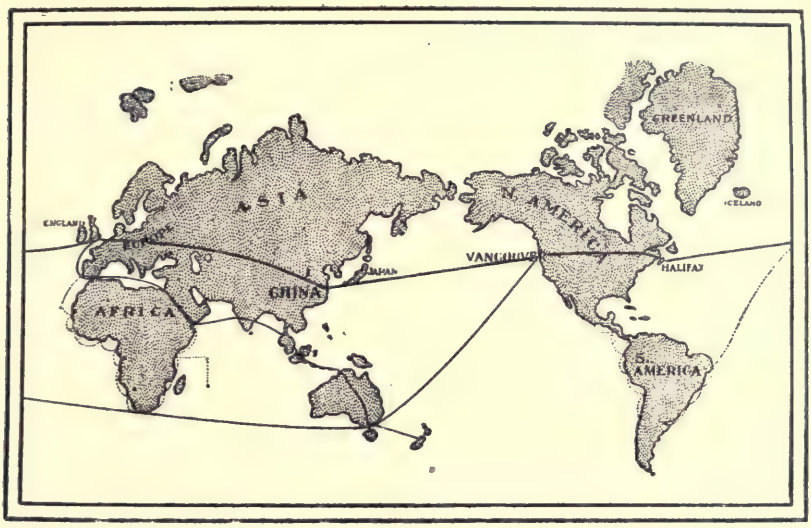
At the other end of the Dominion I was afforded the opportunity of sailing from the ports of Victoria and Vancouver, and of touching at one or two of the minor ports on Puget Sound. Something is, of course, wanted, to complete the shipping facilities of so young a country, but even already much has been accomplished, especially at the town of Vancouver, where vessels now reach all points in Alaska, British Columbia ports, the Puget Sound country, Australia, China, and other points westward. The position of Vancouver as a prominent Pacific coast point is shown in the following table of distances:—

	Miles.
Vancouver to Montreal	2,906
Vancouver to New York, *viâ* Brockville	3,163
Vancouver to Boston, *viâ* Montreal	3,248
Vancouver to Liverpool, *viâ* Montreal	5,713
San Francisco to New York	3,266
San Francisco to Boston	3,370
Yokohama, Japan, to Liverpool, *viâ* San Francisco	11,281
Yokohama, Japan, to Liverpool, *viâ* Vancouver	10,047
Sydney to Liverpool, *viâ* Vancouver...	12,663
Sydney to Liverpool, *viâ* San Francisco	13,082
Liverpool to Hong Kong, *viâ* Vancouver	11,649
Liverpool to Hong Kong, *viâ* San Francisco	12,883
Vancouver to Yokohama	4,283
Vancouver to Hong Kong	5,936
Vancouver to Calcutta...	8,987
Vancouver to London *viâ* the Suez Canal	15,735
Vancouver to Honolulu, H.I.	2,410
Vancouver to Suva, Fiji	5,190
Vancouver to Sydney, N.S.W.	6,960

Vancouver has a very fine harbour, which appears to be capable of great expansion at almost a minimum of cost. In the future it is certain to become a more important centre of shipping with the Far East. Victoria and Vancouver may be regarded as competitors for coast traffic, but, so far as foreign shipping business is concerned, Vancouver must always take the lead.

They point to the fact that the space on the Vancouver-Australian Service was completely contracted for during the year 1903 as far ahead as six months at time, and many Canadian shippers were thus unable to make adequate use of the service. When I was in Vancouver it was announced that arrangements were almost completed for the establishment of another steamship line between that

city and Australasia. To-day the bulk of Eastern Canadian shipments to Australia must necessarily go through United States ports, and it is strongly felt in Canada that the time has come when these conditions should be remedied.



BRITISH NORTH AMERICA IN RELATION TO THE REST OF THE WORLD.

INDEX.

A.

Agricultural resources and development, 172 ; wealth, 173 ; benefit, 218
Agriculturalists and the tariff, 32
Alberta, territory of, 6 ; coal resources, 87
Algoma Steel Company, 118 ; Central and Hudson Bay Railway, 134
Americanization of Canadians, 38
American keenness and British indifference, 75 ; interests in Canada, 76; ports, the use of, 266; competition, 270
Apprentices, 216
Area of Canada, compared, 12, 15 ; of European countries, 16 ; of Asiatic and South American countries, 17 ; of principal British Colonies and India, 18 ; of leading American States, 19
Assiniboia, territory of, 6
Assistance, limited, of Mother Country, 1
Assays of Nova Scotian iron ores, 104, 105 ; of British Columbian ores, 112

B.

Balance of trade invisible, 219
Banking, 166, 216
Barley and oats, production of, 174
Bell, C. N., of Winnipeg Grain Exchange, 173
Belle Island iron ores, 113
Bounties, Canadian, on iron and steel, 52, 54 ; total paid, 55 ; in Newfoundland, 56 ; and British iron trade, 56, 57
Bounty system, Canadian, 52
Braithwaite gold dredge, 152
Brandon, experimental farm at, 175
British Columbia, features of, 7 ; Britain on the Pacific, 8 ; industry under Canadian tariff, 24 ; iron ores of, 110; general mineral production, 160 ; water powers, 188
——competition and tariff preference, 35 ; ships on register, 219 ; imports of Canada contributed by, 220 ; Colonies, growth of trade of, 281
Bugaboo Creek iron ores, 112
Bull, John, trying to make jealous, 44
Burton, P. H., on frauds under preferences, 34
Business relations of Canada and the United States, 61
Butter and cheese, production of, 174 ; exports of to Great Britain, 175

C.

Canada—see also *Dominion*
—— Dimensions and population, 12 ; relations of with United States, 58
—— and the United States—a parallel and a contrast, 63 ; population, 62 ; wealth, 63 ; railway development, 65, 69; shipping, 65, 69 ; exports, 65 ; banking, 66 ; pig iron, cotton, and petroleum, 67 ; agricultural crops, 68 ; mineral output, 70 ; imports and exports, 71 ; debt, revenue, and expenditure, 72 ; rivals of, 179; climate of, 180
Canadian commerce with Great Britain, 218 ; with United States, 277 ; imports for consumption, 220; of various commodities, 221
—— coal resources—see *Coal*; iron resources—see *Iron* and *Ores*

Canadian Manufacturers' Association and tariff, 27 ; principles of, 231 ; trade sections of, 232 ; committees of, 233 ; arbitration powers, 233
—— views on British investment, 78
—— Boards of Trade, 234
—— Iron Furnace Company's works, 116, 122
—— Pacific Railway, 238
Canadian-American Joint High Commission, discrimination, 40
Canal, Sault Ste. Marie, shipping of, 65 ; Citizens, at Algoma, 135
Canals, Welland, 254 ; Soo, 256 ; projected, 255
Capital, investment of American, 75, 76 ; British, 77
Carnegie, Andrew, and discrimination, 40
Cape Breton coalfields, 86 ; water powers, 189
Cartwright, Sir R., on balance of trade, 279 ; trade with United States, 282
Characteristics of the Dominion, 1
Cheap power, 275
Cheese, production of, 174
Chemainus lumber mills, 201
Classification of iron ores, 100
Clergue, F. H., 118, 132
Climate of Canada, 180
Coal resources of the Dominion, 81 ; Eastern Canada, 82 ; Pictou, 86 ; Cumberland and Inverness County, 86 ; Cape Breton, 86 ; Western Canada, 87 ; Crow's Nest Pass, 88, 93 ; Nanaimo, 89 ; North-West Territories and Manitoba, 90 ; Pacific coast, 91
Cobbett, on the St. Lawrence, 2
Cockshutt, W. F., on preference, 31
Coking plants of Canada, 94 ; of Rocky Mountains, 96 ; of Dominion Company, 127
Collingwood Ironworks, 147
Colonial tariffs, range of in 1903, 23
Combinations and syndicates, 216
Commerce, internal and external, 265 ; with Mother Country, 218 ; with United States, 277 ; interchange of, 277, 280.—See *Trade*, *Imports*, *Exports*, etc.
Commission, Imperial, appointment of, 30
Comparison of Canada and United States, 13
Competition in Canadian markets, 267, 270. See *Commerce*, *Trade*, etc.
Congress, Imperial, and preferential tariffs, 30
Consolidation, Imperial, 48
Copper Cliff Rock House, 150
—— resources, 161
—— ores, low grade, 162
Cost of pig iron at Sydney, 158
Cotton industry, Canadian, and tariff, 26
Cramp Steel Company, 119
Creamery, first, in Manitoba, 175
Crops, agricultural, of Canada and United States, 68
Crow's Nest Pass collieries, 93
Customs' Union, Imperial, proposals for, 49
Cumberland coalfield, 86

D.

Dairy school, 175
Debt, revenue, and expenditure, 72
Difficulties of consolidation of Empire, 48
Diagrams of Canadian dimensions, etc., 14
Dimensions and population of Canada, 12, 15
Dining camp, Saw Bill Mine, 153
Dingley Bill, proposed reduction of 20 per cent. under, 44
Dominion, relief map of, 10 ; unexplored regions of, 10—See also *Canada*
—— Coal Company's collieries, 85 ; Dominion Iron and Steel Company, 118, 123
Drummond, Senator, views of, 31 ; G. E., on Americanisation of Canada, 38

E.

Eastern provinces and the North-West, 178
Economist, Montreal correspondent of, on preference, 37
Education, 217
Employers and commercial organisations, 231
Engineering, general conditions and development, 271

European trade, competition of Canadian ports for, 283
Excursions following Imperial Congress, 40
Exports, Canadian movement of, 28; of iron ores, 114; general, 222
External commerce, 267

F.

Farm animals, number of, in Manitoba and North-West Territories, 174
Farms, experimental, 175; increased value of in United States, 176
Features, general of the Dominion, 1
Fielding County Act (Canadian), 53
Fiscal policy, discussion of at Imperial Congress, 30
Fisheries and forestry of the Dominion, 75, 199; value of, 203; men employed in, 203
Flax, cultivation of, 271
Flour milling plant, 176
Foodstuffs of Great Britain, 182
Foreign vessels in Canadian trade, 263
Forestry, 199
Fort William, 174
French, the Canadian, 21
Fruit-growing capabilities of Canada, 74
Future population of Canada, 18

G.

Geographical division of Canada, 18; position of Nova Scotian ports, 285, 286; of Pacific (Vancouver) ports, 288
Gold and silver mining, 158
Granby smelter, Grand Forks, 161
Great Britain's attitude to Canadian preference, 48; commerce of, with Canada, 218; commerce in 1892, 1902, and 1903, 280
Growth and character of population, 14

H.

Halifax as a Canadian port, 284
Helen iron mine, 109, 134
Hematite iron ores, 101
Holland, Sir William, on tariffs and preferences, 32
Hudson Bay Company, 9; area of, 13; climate of, 182

I.

Immigrants of Canada and United States, 20
Imperial consolidation, scheme of, 50
Imports, food, into United Kingdom, 222
—— and exports of Canada and United States compared, 71
India, wheat industry of, 180
Industries suitable for Canada, 67
Industrial development, general, 269
Intercourse of Dominion and United States, 58
Internal commerce, 264
Inverness County coalfield, 86
Indifference of Mother Country to Canadian interests, 219
Investments of British capital, success of, 79, 80
Iron Furnace Company'sWorks, Midland, 116, 122
—— trade at Imperial Congress, 33; bounties, Canadian, 53; competition of United States and United Kingdom in Canadian markets, 222
—— works of Iron Furnace Company, 116, 122; Diseronto, 119, 122; Dominion, 118, 123; Nova Scotia Company, 144; Algoma, 133; Collingwood, 147; Londonderry, 118
—— Ore resources—see *Ores*
—— Canadian, capacity of production, 115; consumption, Canadian, 115; industry, general view of, 115; earliest works and capital invested in, 115; unsuccessful results of, 116; plants in Nova Scotia, 143
—— ore deposits, working of, 120; ranges of "Soo," 137
Irving Bell, on preferential trade, 35

J.

Jackson, Colin F., on trade with United States, 279; Vancouver Engineering Works, 272
Johnston, Government statist, on interchange, with U.S., 278

K.

Kaslo, British Columbia, general view, 158
Keewatin, flour-milling plant of, 179

L.

Labour, remuneration of, in the coal and iron industries, 219; hours of, 223; conditions, prominent, 224; Canadian, special difficulties of, 225; commission, of B.C., 227; legislative aspects of, 228; general attitude of, 229; disputes, 213
Lake Superior ores, 105; area, 265
Lakes, great, shipping of, 262; extent of, 259
Lands pledged to railways, 248; for sale, 177
Laurier, Sir Wilfrid and Protection, 26
Lead, resources of B.C., 163; bounty on, 163
Lignites of Manitoba, &c., 87
Limonite iron ores, 101
Londonderry Steel Company, 118; Iron and Mining Company, 119
Lumber industry, 200

M.

Machinery, tariff duties on in Canada, 23
Management, general, 212
Manitoba, province of, 3; water powers, 190
McFee, Mr., on preference with Canada, 36
Magnetite ores, 103; magnetic iron sands, 106
Manitoba coals, 87
Manufacturers of Canada, organisation of, 23; on reciprocity, 46
Manufacturer, the Canadian, on preferential policy, 36
Manitoba acreage under oats, 269
Manufacturing industry of Canada, 48
Markets, home and foreign, of Canada and United States 65; Canadian, rapid development of, 221
Mesabi iron ore deposits, 151; mining iron ore, cost of, 220
Methods of business, 211
Michipeeoton ores, 98, 109, 138
Milling plant, flour, at Keewatin, 176
Ministers, Canadian, on protection, 25
Mining, American interests in, 76, 77; of coal, 220
Mineral production of Canada and United States, 70; of various minerals, 121; output of Canada and United States compared, 164; development of Dominion, 268
Moxam, Mr., estimates of cost of producing iron at Sydney by, 156
Municipal Powers Commission, 190, 191

N.

National Reciprocity League, establishment of, 44
Natural gas resources, 274
Navigation improvements on St. Lawrence, 261
New Brunswick, general features of, 3
New Denver, B.C., 157
Newfoundland, bounties on iron, 56; iron ore of, 112
New industry, a projected, 275
Niagara, water powers of, 184
Nickel mines of Ontario, 166; nickel production and prices, 166; Sudbury nickel interests, 167; new discoveries of, 168; proposed reservation of, 169; uses of, 170
North Sydney, port of, 286
North-west, and East provinces, 178; development of, 179
Nova Scotia, province of, 3; coal-fields of, 8; iron ores of, 101, 104; early iron-making plants in, 143
Nova Scotia Steel and Coal Company, 119; ocean ports of, 283

O.

Oats and barley, production of, 174; 269
Ocean ports of Nova Scotia, 283
Ontario, iron ores of, 107, 108, 121; water powers, 190; nickel mines, 166
Open-hearth furnace plants, 130
Ores, iron, of the Dominion, 98; output of, 98; American and Canadian conditions, 99; bounty on mining of, 100; classification of, 100; ores of Nova Scotia, 101; principal Nova Scotian deposits and assays, 104; ores of Quebec, 106; of Ontario, 107; of British Columbia, 110; of the Territories, 112; of Newfoundland, 112; exports and outlook of, 114; working of deposits of, 120; of Dominion Iron and Steel Company, 127; "Soo" ranges, 137

Organisation and administration of industry, 211
Otto-Hoffman coke oven plant at Sydney, 129

P.

Pacific Coast Colleries, 90. See *Vancouver* and *British Columbia.*
Paper industry, 273
Pensions and retiring allowances, 215
Petroleum industry, 274
Pictou coal fields, 86 ; iron ores, 100
Pier, unloading, of the Diseronto Company, 119 ; of Dominion Company, 124, 125
Policy, tariff, of the Dominion, 22 ; of Canadian manufacturers, 27
Political union with mother country, 49
organisations, secret, 227
Population and dimensions of Canada, 12; growth and character of, 14 ; future of Canada, 18; in United States, growth of, 63
Portland (Maine) trade of Canada through, 241
Ports, competition of, for Canadian and European trade, 283; United States, Canadian trade through, 284 ; Halifax, 284; Sydney, 285 ; North Sydney, 286 ; St. John, 287 ; Pacific, 228.
Port Simpson, 245
Power, cheap, 275
Press, Canadian, attitude of, on fiscal question, 36
Preferential tariffs, 30 ; Canadian manufacturers on, 33; liability to frauds under, 34 ; policy, merits and demerits of, 38
Profit sharing, 215
Protection, pleas for higher, 24 ; of United States, influence of in Canada, 278
Proposals for consolidation of Empire, 49
Pulp works at Sault Ste. Marie, 133; industry of Canada, 202 ; exports of, 203

Q.

Quebec, province of, 2 ; general features, 3 ; iron ores, 106 ; declining maritime commerce of, 261

R.

Rails, steel, demand for, 142 ; supplied to railways, 241
Railway development of United States and Canada, 65, 69; Grand Trunk, 237, 238 ; C.P.R., 240, 241.
Railway lands, 248 ; commerce, 266
Railway transportation conditions in Canada, 236 ; facilities, 236 ; mileage, 238 ; subsidies, 239 ; coal-carrying lines, 240 ; range of freight rates, 249
Railways of Canada and United States compared, 239 : extension of, 240 ; trans - Continental, 244 ; proposed new, 244
Reciprocity Treaty with United States, 43 ; 278
Reflections, Canadian, on British diplomacy, 79
Relations of the Dominion and the Republic, 58
Resources, unexplored and unascertained, of the Dominion, 11
Reciprocal arrangements with United States, 47
Relations, trade—see *Trade, Commerce, Imports, Exports*, &c.
River systems, 265. See also *Waterways, Canals*, and *Lakes*
Rocky Mountains, coking plants of, 96 ; features of, 160
Ross, G. W., Premier of Ontaria, on reciprocity with Canada, 46 ; on commerce with United States, 62 ; on "Marching" orders of Canada, 279
Rossland, B. C., 156
Russia as a wheat-growing country, 179 ; compared with Canada, 180

S

Sandon, B.C., general view, 155
Sault Ste. Marie Canal, shipping of, 65 ; works of, 132 ; water power, 185
Saw Bill gold mine, 155
Shipping trade of Canada and the United States, 65
"Sea of Mountains," in Rockies, 9
Silver, mining of, 158

Shipbuilding on Canadian waters, 259 ; Halifax proposals for, 260
Shingle mills of Canada and United States, 280
Shipping of Great Lakes, 262
Siberia, farming conditions in, 179
Spathic iron ores, 102
St. Lawrence, gulf of, 286, 260
Steel Corporation of United States, 120
Steel industry, Canadian Ministers on the production of, 25 ; imports into Canada, duties on, 25
Steel works, Dominion, 123 ; Sault Ste. Marie, 141 ; Nova Scotia, 143 ; Collingwood, 147
Sydney, iron and steel works at, 130 ; and North Sydney, as ports, 286 ; distances of foreign markets, 286
Strikes, frequency of, 229, 225
Strike, Canadian Pacific,

T.

Tariff and tariff policy of the Dominion, 22 ; on iron and steel imports, 23 ; in relation to political parties, 28 ; prospect of increase in duties, 29 ; concessions in, 32 ; preference and British competition, 35 ; on iron ores entering United States, 98
Tariffs, Colonial, 23
Tennessee Valley as wheat-producing region, 181
Textiles, Canadian, and tariff duties, 26, 270
Territories, features of, 7 ; iron ores of, 112
Three Forks, B.C., view of, showing Granby smelter, 157
Timber, wealth of, 10 ; resources of Dominion, 199
Titanic iron ores, 101
Tobacco, culture of, 177
Trade relations of Canada and Mother country, 34 ; and United States, 61 ; unions, international, 226 ; unions, functions of, 230 ; boards of, 234 ; unions and wages, 214 ; invisible balance of, 219 ; European competition of ports for, 283
Traffic in bond, 284
Trail Creek, B.C., 149
Trans-Continental railways, 244, 246
Tupper, Sir C. H., on American interests in Canada, 76.

V.

Vancouver, the Gateway of the Empire, 8 ; engineering works, 272 ; as an ocean port, 288; Australian service, 288
Vancouver island, coal deposits of, 89 ; iron ores of, 110 ; general mineral resources of, 159
Van Anda smelter, B.C., 162
Victoria, B.C., 288

W.

Wabana iron ores, Newfoundland, 152
Wages paid in coal and iron industries, 219 ; at Dominion Steel Works, 221 ; in Canada, United States, and Great Britain compared, 221 ; in engineering works, Vancouver, 222 ; movement of, 222 ; " fair," 222 ; and trade unions, 214
Wants of the Dominion, 74
Water communications, 264 ; area Canadian, 258
Water-power resources of Canada, 183 ; Niagara, 184 ; Sault Ste. Marie, 186 ; Quebec powers, 187 ; Shawingan and Lachine, 188 ; British Columbian powers, 188 ; Cape Breton powers, 189 ; Manitoba, 190 ; Ontario, 190 ; cost of, 190 ; municipal power commission, 191
Waterways, Canadian, 253
Wealth of United States, 64 ; of the Dominion, 205
Wheat lands, of Manitoba, 248 ; yield of, 173 ; in Manitoba and North-west Territories, 173
Williams, representative, of Mississippi, on reconvening Joint High Commission, 44
Winnipeg grain and produce exchange, 173 ; Town Hall, 182
Woollen manufactures and tariff, 26
Workmen, handling of, 212

Y.

Yukon territory, map of, 9

Z.

Zollverein arrangement, 32

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